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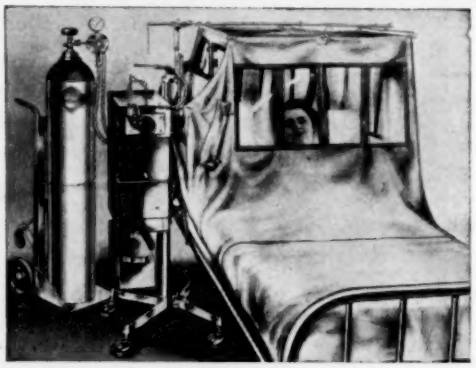

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M.D. Camb., F.R.C.P. Lond., SEC. R.S.
DIRECTOR OF THE NATIONAL INSTITUTE FOR MEDICAL RESEARCH

AMONG his many and generous benefactions to the college, which long held a central place in his interest and his devotion, William Harvey, as you know, provided for the delivery of an annual oration "to commemorate all the Benefactors of the College, and to Exhort the Fellows and Members of the College to search and study out the secrets of Nature by way of Experiment." Harvey thus formally bequeathed to us a great tradition, and took care that we should annually be reminded of its meaning and its claim. A Fellow of this college could receive no higher honour than to be called upon thus to commemorate William Harvey himself, as the greatest of our benefactors, and to obey his injunction; and I thank the president for having, in this year, accorded this honour and this duty to me.

A New Method of Increasing Knowledge

We remember with pride that Harvey was lecturing on anatomy to this college during the twelve years which preceded and led up to the publication of his immortal book. It is on record that the transforming conception of the function of the heart, as a pump driving the blood "as it were in a circle," had already taken shape in his mind when his first course of these lectures began. Of the earlier course of development which had led him to the great discovery we know little beyond what he tells us in his book, and there in logical rather than historical order. We may feel certain, however, that the initial incentive to his inquiry was received during his studies in Padua. He tells us, indeed, that the discovery and description of the valves in the veins, by his teacher, Fabricius, acted as a direct stimulus; and there was other knowledge already then available, and waiting only for the central conception with which Harvey was to give it unity and simple meaning. The passage of blood through the lungs, from the right to the left side of the heart, had been clearly put forward in the book of Realdus Columbus, who may have seen it in the earlier tract of Servetus; Cæsalpinus had apprehended the meaning of the heart valves, had argued that expansion of an artery with the pulse must be synchronous with the systole of the ventricle, and had even recognised that blood flows from the heart in the systemic arteries and to it in the veins. We might receive the impression that a simple step only was needed, for the discovery that the blood has a continuous and double circulation. My predecessor of two years ago, Sir Thomas Lewis, suggested to us, indeed, that the discovery could not long have been delayed, even had Harvey not made it, and that with the introduction of the microscope it could not have remained concealed. I suspect that, in that opinion, too little influence may have been allowed to the blinding effect of age-long tradition and doctrine, to question which was still an impiety, and which still befogged the minds even of those among Harvey's predecessors who had most nearly arrived at the truth. I feel no strong conviction that even Malpighi, when the microscope showed him the movement of blood in the capillary vessels, would have known the meaning of what he saw, if Harvey's experiments, presented in a masterly array of argument, had not swept away the doctrine of Galen before the capillaries could be seen. It is clear that Harvey's own teacher, Fabricius, though he saw the valves in the veins and even observed their obstructive effect when the blood was pressed towards the periphery, thought of them only as preventing a too rapid passage, in what still seemed to him a natural direction of the flow. We know, too, that when, after years of experiment, demonstration and argument before this college, Harvey gave his discovery to the world, it found a world unready to accept it, even in those circles which had the same access to knowledge of all that had been done before Harvey. The rare combination was needed of the scientific insight of genius, with a character and a courage of the highest order, to enable Harvey to break through the mists of hallowed error and to walk boldly into the light of a new epoch.

I am in the fullest agreement, however, with Sir Thomas Lewis and with others among my distinguished predecessors, in regarding as Harvey's greatest achievement, not that he made a discovery of such profound and permanent significance, but that he created and displayed for all time the method by which such discovery may be attained and made secure. In the dedication of his book, "De Motu Cordis," he lays down the principle of his method —"not from books, but from dissections; not from the positions of philosophers, but from the fabric of nature"; and then, in the book itself, he gives us the supreme example of its application. Again and again in his writings he recurs to this new principle of research, and proclaims his creed with an apostolic fervour. Thus, in his less familiar book on the Generation of Animals, "It were disgraceful, therefore," he writes, "with this most spacious and admirable realm of nature before us, and where the reward ever exceeds the promise, did we take the reports of others upon trust, and go on coining crude problems out of these, and on them hanging knotty and captious and petty disputations."

To the men of his day Harvey was preaching a new doctrine, and proclaiming a new method of increasing and securing knowledge. In this, indeed, he moved with the advancing thought of his time, and of the great men with whom he had had contact; for Galileo was a professor in Padua when Harvey studied there, and Francis Bacon was Harvey's patient. To us it may seem now to be a platitude, that science advances by experiment and by direct appeal to Nature, rather than by disputation about what others have observed, or we ourselves have thought and believed. Yet, as Harvey seems to have foreseen, all of us, whether our effort to advance knowledge is made by the bedside or in the laboratory, need still to be reminded of this now familiar truth. The winning of real knowledge by experiment is slow and laborious, and exacts a stern discipline, while speculation offers an easy invitation to the ingenious mind. Theories we must have, to give system to our facts and direction to our experiments; and the temptation is ever present, to the eager experimenter even more, perhaps, than to the quiet observer, to press new facts into the framework of

* The Harveian Oration delivered before the Royal College of Physicians of London on Oct. 18th, 1935.

a plausible theory, and to distrust or to disparage those which refuse to fit easily into a fancied picture. We stand all in daily need of Harvey's exhortation, to approach Nature with clear vision and alert attention, so that we may receive her teaching with free and humble minds.

Harvey and Clinical Research

Sir Thomas Lewis has rightly claimed that Harvey, the physician, was the father not only of physiology but of clinical science. In Harvey's work we may find, indeed, the true beginning of the whole fabric of experimental medicine, of which our own times have witnessed so prodigious a development. No man with Harvey's passion for inquiry, and with his faculty for patient and precise observation, could have failed to accumulate material of great interest and significance in his practice as a physician. It is sad to think how little of this remains on record for us. In "De Motu Cordis" he forsees that "every part of medicine, physiology, pathology, semeiotics, and therapeutics" can be illuminated by the new truth of the circulation which he has declared, and that a field for study has been opened, so vast that his "whole life, perchance, would not suffice for its completion." In his first argumentative pamphlet, addressed to Riolan in defence of the circulation, published in 1649, he still speaks of his intention of publishing his "Medical Anatomy," which from his description of its contents might have made him the first of morbid anatomists. Elsewhere, in the essay on Parturition, which is richer than most of his writings in clinical records, he refers to one case as introduced from his "Medical Observations." We shall never know how much of Harvey's records of clinical research may have been lost to us by the political robbery and destruction of his papers during the Civil War. Scattered through his published work we find but a sample here and there, as in the clinical experiment introduced, with but little relevance indeed, into a chapter of "De Generatione." There Harvey describes a young nobleman who, as the result of fractured ribs followed by suppuration, was left with a permanent, open cavity in his side. At the bottom of this Harvey's exploring fingers encounter the rhythmically protruded apex of the heart, covered only by a layer of "fungous flesh"; so that he can now verify on man, and demonstrate to the King, the correspondence of the apex-beat and of the pulse at the wrist with the systole of the ventricle, in conformity with what experiments on animals had shown him long before; but he can also add the new observation, which no animal experiment could have enabled him to make, that the normal heart is without any sense of touch.

The Genesis of the Royal Society

Harvey was a physician, and approached his problems as such; but he was a man of his own period, or in advance of it, ranging in eager inquiry over the whole animal kingdom, and using everywhere the simple methods of investigation which came within the scope of his training and his equipment. In "De Motu Cordis" and again, more definitely, in "De Generatione," we find reference to another of his intended publications, which should have dealt with the Causes, Uses, and Organs of Respiration. In the earlier and justly more famous book we find him still accepting the old doctrine, that the function of air in the lungs is to mitigate the heat engendered in the heart; but by the later date he has had a glimpse of a truth which could not have been clearly seen with the knowledge of his time, and was not to be truly revealed till eleven years after his death. Discussing the need of the newly born infant for air, when once it has breathed, "it is," writes Harvey, "as if the heat were rather enkindled within the fœtus than repressed by the influence of air." He makes the suggestion with doubt and hesitation, admitting that it deals with a question of the greatest difficulty. It is no more, indeed, than an inspired guess; but it brings Harvey into another association, to which he belongs as of right, and to which we may feel certain that he would have belonged in fact, had he lived but a few years later. As early as 1645, when Harvey was still attached as physician to Charles the First, a group of men had begun to meet for discussion of the new experimental philosophy, stimulated by the writings of Bacon and by the news of physical discovery coming from Italy. Harvey's "De Motu Cordis" must also have been known to them. Later they met in two groups, in London and Oxford; and the group meeting in London included Harvey's close friend Dr. George Ent, while among those meeting in Oxford was another of his friends, Dr. George Bathurst of Trinity College. Bathurst had even shared in Harvey's embryological observations; for Aubrey tells us that Bathurst "had a hen to hatch eggs in his chamber, which they (Harvey and Bathurst) opened daily to see the progress and way of generation."

Harvey, as we know, retired in 1646 to his brother's house; and when, after the Restoration, the groups of experimental philosophers became, in 1662, incorporated as the Royal Society of London by a Charter from the new King, who desired "with a particular grace" to "encourage philosophical studies, especially those which by actual experiments attempt either to shape out a new philosophy or to perfect the old," Harvey had been dead for five years. But the spirit of the men who formed the new Society was that of Harvey, and their activities were explicitly determined by the principle which he had so insistently advocated, and of which his own work had given a shining example. His intimate friend, George Ent, who was his junior by 26 years, was a member of the Royal Society's first Council.

The Meaning of Respiration

The Royal Society, in its early years, may even be regarded as having, in a more particular sense, continued the work which Harvey had begun. Malpighi had seen the blood capillaries before the Society was incorporated, but Leeuwenhoek's much fuller observations on them were made public in a letter to the Royal Society, as were so many of the discoveries which he so amazingly made with his simple microscopes. It was a group of the early Fellows in the Society, including the great Robert Boyle, Robert Hooke, the Society's first curator of experiments, Richard Lower, and John Mayow, who made the first new stride forward in the science of physiology, which Harvey had founded. Harvey, as we have seen, had begun already in 1651 to doubt the doctrine that the function of respiration was to cool the blood, and to suspect that the air in the lungs might even "enkindle" the heat in the body. He himself could have carried the idea no further, but we may imagine how he would have rejoiced, if he could have been with Boyle and his associates, to watch its development in the light of their new discoveries. For, while Harvey's discovery of the circulation was based on the application of simple

mechanical principles to precise anatomy, and on the experimental examination of the working of the heart and the blood-vessels in living animals, the meaning of respiration could only be revealed by a knowledge of the chemistry which Boyle and his followers were newly creating for themselves. It had to be recognised that the function of the respiration involved a process of the same nature as combustion; and neither process could be understood, until the discovery of oxygen had essentially been made. And this, in effect, was what Boyle, Hooke, and Mayow appear to have achieved, though the full significance of their discovery was long lost to sight. Lower, the only physician of the group, who also made important extensions of Harvey's work on the heart, added to the study of respiration the important discovery, which Harvey himself might have made, that it is exposure to the air in the lungs which changes the dark venous into the bright arterial blood; and Hooke gave a demonstration to the Royal Society which Harvey might well have made to the College of Physicians, when he showed that life was maintained with an open chest, when air blown steadily into the trachea was allowed to escape from holes made in the surface of the lungs. But the essential function of the air, and in particular of what they called its "nitro-aerial spirit," in supporting a kind of slow combustion in the body, could only be apprehended by these men who were studying air and its relation to combustion in general, in the light of the new sciences of physics and chemistry, of which they were themselves among the founders.

Separation of Physiology from Clinical Medicine

It seems to me to have been inevitable that, under these conditions, the study of respiration, and with it the centre of progress in physiology, should for the time have passed out of the hands of the physicians, and into those of investigators ranging the whole field of natural philosophy. The divorce from medicine of physiology, especially in this country where Harvey had brought it to birth, not only became nearly complete—more nearly complete, I believe, than it can ever become again—but it persisted for more than a century. And this may have been partly due to the fact that progressive minds in medicine became preoccupied with the systematic task of describing and classifying diseases; but the long persistence, I believe, was due in greater measure to the failure of chemistry to adhere to the principle which Harvey had proclaimed. It seemed to turn its back on the truth which had so nearly emerged from the early experiments of the Royal Society, and followed Stahl, a learned chemist, but a dangerous and speculative theorist, who led it, and much of physiology with it, into the fog of the phlogistic theory. For more than a century progress was retarded and truth was obscured, as the results of experiments were fitted or distorted into this frame of error. It began to be shaken with Black's discovery of carbonic acid; but even Priestly, when he rediscovered oxygen, could only regard it as "dephlogisticated air," and respiration, with putrefaction and combustion, as a "phlogistic process." The experimental genius of Lavoisier was needed to sweep the cloud away, and to let the light shine, which had already been dawning more than a century earlier, so that physiology and medicine could once more go forward with a clear vision; and Lavoisier thus became the greatest physiologist as well as the greatest chemist of his day.

Conditions of Renewed Collaboration

Of the leading actors in this rather sad interlude, Stahl was a physician, as Harvey had been; but Stahl had forsaken Harvey's methods, and relapsed into those which he condemned. I think it can properly be argued, however, that from Boyle to Lavoisier the basal discoveries required for the understanding of respiration had to be made by those who were laying the foundations of physics and chemistry, without any insistent preoccupation with the structure and functions of the human body, in health or in disease.

Already, then, from the very beginning of experimental science, when, as we are apt to think with envy, the whole of the new experimental knowledge could still be assimilated by a single trained intelligence, some division of function began to show itself among the promoters of physiology, according to their way of approach, from the side of medical training or from that of the fundamental sciences. The division has inevitably grown deeper and the lines of cleavage ever more numerous. Such reproduction by fission is common to all the sciences, and is almost a condition of their growth; but, as with all but the lowest organisms, rejuvenescence and renewed vigour of development is dependent on fertilising intercourse, between units which have acquired a relative independence. There are those who see with fear and with regret the extent to which large and actively progressive sections of physiology, and even of pathology, have now loosened, or almost broken for a time, their connexion with the parent medicine, and formed closer alliance with physics, with chemistry, or with other branches of science. I believe the fears to be groundless, and I am sure that the regrets are vain. It would be deplorable, indeed, if there should be any failure in the succession of those who, coming to physiology from the side of medicine, devote themselves to increasing knowledge of the functions of the normal animal or human body as a whole, and make their contribution to the growth of medical knowledge in close coöperation, and even in functional interchange, with those whose centre of activity is in the wards. I see no reason to fear such failure: on the contrary, I think there are many signs of a growing recognition, that both physiology and clinical medicine have still this duty and this need of a more immediate coöperation. But, as at the new birth of experimental science in the seventeenth century, so to-day there are still domains opening to physiology, which can only be explored by men, some of them trained in other disciplines than that of medicine, who must find their fruitful alliances in other fields of progressive scientific knowledge. I have no qualm of doubt, that the result, in the future as in the past, will be ultimately to infuse new life into medicine itself, and to promote its renewed advance, provided only that one condition be fulfilled. And I speak now in warm endorsement of the plea, which Sir Thomas Lewis urged here with such conviction two years ago. The condition is that clinical medicine itself, in the hands of those who devote themselves to the increase of knowledge rather than its application, should remain, and should increasingly become, an experimental science, as Harvey saw it. As science grows, each of its followers must of necessity limit his expert knowledge and special technique to an ever narrowing field; but the condition for stimulating and fertilising contacts is not community of expert equipment, but a common priority of interest in the advancement of scientific knowledge, and a common direct experience

of the method by which that advance can be promoted. Harvey gave the first great example of that method, and wished that we should be exhorted still to follow it. By obedience to that exhortation clinical medicine can remain in full communion with the other departments of experimental science, giving them its full coöperation and taking its full share in the general advance.

"De Generatione Animalium"

Harvey's "De Motu Cordis," though its contents changed the face of medicine and opened a new epoch in science, is little more than a pamphlet in length. It may be supposed that, during the years in which he tested and confirmed his facts and interpretations, in lectures to his colleagues, Harvey was sifting his materials and clearing his mind, and was thus able to achieve this masterpiece of compact and orderly presentation, by which the reader is carried with him to a triumphant and irresistible conclusion. Very different in this respect is the other book which he left us, "De Generatione Animalium." This contains a wealth of careful and accurate observations, in the two series dealing with the development of the chicken on the successive days of incubation, and with the appearance and development of the fœtal deer on successive days after impregnation of the doe or the hind. Harvey's description of the earlier stages of embryogeny, and especially of placentation in the cervidæ, for the observation of which his royal master and patient allowed him to have unrivalled opportunity, might, one feels, gain a new interest, if edited and interpreted in the light of the comparative knowledge of these processes, which has been so greatly extended in recent years. Harvey, however, though he could, as always, observe faithfully and give a precise and vivid description of the things and the changes which he saw, lacked for their interpretation all that the microscope began to reveal so soon after his day. And though his description of the origin and development of the chick deals faithfully with the sometimes fantastic errors of his teacher Fabricius and others of his predecessors, it cannot stand with that which Malpighi was to send to the Royal Society some 22 years later, and which remained with remarkably little need of change for another two centuries.

This book, we may feel sure, is not in the form in which Harvey would himself have prepared it for publication. It is long and diffuse, and full of digressions which interrupt the progress of the argument. We know, indeed, from George Ent, that it would not have come to publication at all had his persuasion not prevailed over Harvey's reluctance. Thus we have here presented to us, not the concise account of new observations, and of conclusions directly to be drawn from them, which Harvey in the days of his mind's full vigour might have given us. We have, instead, together with records of brilliant observation, mostly set down long before, the long-drawn and wordy cogitations which had probably accumulated over many years; in particular we have, at each stage, long discussions as to the points on which Aristotle was already right, or as to those on which Fabricius can be shown to have gone astray. Harvey was an ageing man, tired with the controversies in which he had been involved by "De Motu Cordis," unwilling to publish more, and depressed by the thought that his work on reproduction was left permanently incomplete by the loss of his observations on insects. We may be very glad, however, that Ent overcame his scruples; for this book not only gives us further insight into Harvey's method, when he "addressed Nature herself," and "consulted his proper senses," but allows us also to see into what vague and fruitless speculations even he could wander, far beyond the facts available to his observation, when he forsook his own precepts. Harvey, with no microscope, could have no knowledge of spermatozoa, though it is curious that he should have missed the follicles and corpora lutea of the mammalian ovary. Like his predecessors, he seems still to regard the ovary as a kind of female testis, but he rejects the view that the male and the female seed mingled in the uterus, and there gave rise to the ovum. He knows, of course, that the hen can produce ova without fertilisation by the male. Not finding the semen in the uterus after coitus, he denies that it penetrates so far. For him the semen exerts a mysterious fertilising influence on the whole female organism, under the stimulus of which the uterus conceives a fertile ovum, as the brain conceives an idea. He seems almost to allow himself to be misled by a metaphor; for, having seen waves of contraction passing over the uterus of a recently impregnated deer, he even wonders whether the brain would show such movement, if we could watch it in the act of conception.

Some discussion has arisen with regard to Harvey's views, as indicated in various passages of this remarkable book, as to the possibility of spontaneous generation. It is, indeed, not easy to be certain as to his belief. On the title-page and early in the text he clearly states that "all animals . . . are produced from ova." Later, in the same chapter, we find him stating: "Even the creatures that arise spontaneously are called automatic, not because they spring from putrefaction, but because they have their origin from accident, the spontaneous act of nature, and are equivocally engendered, as it is said, proceeding from parents unlike themselves." Here he seems to believe that, though the egg must always be the first stage, it may in some cases arise spontaneously, or from parents of a different species. Later in the book, however, we find another passage, written perhaps at a later date, which, if taken by itself, would suggest that Harvey had reached a conclusion much further in advance of the knowledge of his day. "But on these points," he writes, "we shall say more when we show that many animals, especially insects, arise and are propagated from elements or seeds so small as to be invisible (like atoms flying in the air), scattered and dispersed here and there by the winds; and yet these animals are supposed to have arisen spontaneously, or from decomposition, because their ova are nowhere to be found." We are left wondering what we may have lost by the destruction of Harvey's records of his observations on the generation of insects; how they might have related his experiments to those of his contemporary Francesco Redi; and what basis of observation they might have shown us for this remarkable passage. Harvey, we must remember, had no knowledge of any animals, or living things, too small for detection by his unaided vision. But this conception, even in relation to the living things which he knew, is much in advance of his age, and seems to link him in thought, across the coming centuries, with Spallanzani, and even with Pasteur and Tyndall.

Research of To-day

It is customary on this occasion to review some recent phases of active experimental development

in the field of the medical sciences. We could pay no more fitting tribute to the memory of the founder of experimental medicine. The task of selecting items for such mention, and especially of associating them with the activities of particular men, will probably become year by year less easy. It becomes indeed ever more difficult for any investigator to scrutinise and to appraise even those published observations and experimental records which are related to his own special field of work. It begins to be the rule rather than the exception for some new and definite advance to be announced almost simultaneously from more than one laboratory, and often from more than one country. The position may well look different in historical retrospect; but to us who live amid this urgency of accumulation, it must seem unlikely that a new epoch will ever again be opened by a Harvey or a Darwin, sifting and testing his evidence for patient decades, before he gives his theory to the world. Meanwhile we can try to distinguish tendencies, and lines of more rapid development, promoted by the activities of many, which the future may recognise, perhaps, as epochs dating from our own time.

ULTRAMICROSCOPIC VIRUSES

We date the beginning of the great epoch of bacteriology, dealing with organisms which the ordinary microscope revealed, from the work of Louis Pasteur and Robert Koch. Harvey had no knowledge of living beings below the limits of unaided visibility; but he had only been dead twenty years when Leeuwenhoek, in one of his letters to the Royal Society, first described and even recognisably figured bacteria, as seen with his simple lenses. Two further centuries passed, however, before Koch was able to give the first completed identification of a bacillus as the specific cause of a disease. When, after a period of progressive triumph, bacteriology still failed to reveal the causes of some of the most familiar and deadly among the infectious diseases, there came in our own time the intensive study of a further order of living, infective agents, below the range of ordinary microscopical vision. It is unlikely that the future will identify any outstanding names with what may be the beginning of another epoch as important to medicine as that of bacteriology, concerned with the viruses still called "ultramicroscopic" or "filterable"; though special microscopical methods have already rendered many of them visible, and all can be stopped, and even differentially separated, by filters of an adequate and accurately graded fineness. We associate the names of Ivanovski and of Beijerinck with early discoveries of such a virus as the cause of a plant disease, and those of Loeffler and Frosch in a similar sense with the virus causing the foot-and-mouth diseases of cattle. But the general advance in this field, which did not begin until a quarter of a century later, has been on a wide front, and investigators in many laboratories of many lands are engaged in it. In rapid succession the agents responsible for infectious diseases, which bacteriology had left as unsolved problems, are being identified as belonging to this group, which but a few years ago seemed so inaccessible to further research. My colleague, C. H. Andrewes, in his Oliver-Sharpey lectures of 1934, discussed before this College the many respects in which conformity to this type is shown by the infective agents which transmit certain tumours in experimental inoculation. One of the recent additions to the general list of diseases transmitted by viruses, and one which has excited interest in circles beyond that of medicine, is epidemic influenza, for the study of which by my colleagues, Laidlaw, Andrewes, and Smith, the earlier work of Laidlaw and Dunkin on dog distemper had provided some ground of experience, and had brought to notice a suitable subject of experiment, in the ferret. Further advance in the study of this, and of many other virus infections, is dependent not only on the provision of opportunity by Nature and by clinical medicine, but also on the development of new methods, which is in active progress in many laboratories. New principles of immunity, for which bacterial immunology has given at best imperfect analogies, are coming into view. The greatest difficulties of conception, however, are those connected with the dimensions of the infective units of the different members of a series showing so many points of uniformity in their general behaviour; for these units are, at the upper end of the scale, just visible by ordinary microscopy, with the appearance of very small cocci; while, at the lower end, the units of such viruses as those of foot-and-mouth disease and poliomyelitis appear to be of comparable dimensions to the molecules of certain complex proteins. Here, if the data of measurement have been rightly interpreted, we seem, through a continuous series, to pass from definite though very minute organisms to a borderland between organisation and colloidal dispersion, where biology and physical chemistry must, perhaps, join hands in interpretation of a new order of vital phenomena. It may be noted that, quite recently, confirmation has been given of a previous claim to have obtained the virus of a plant disease in the form of protein crystals.

AN EPOCH OF CHEMISTRY IN MEDICINE AND BIOLOGY

If I were asked to name a prevailing tendency of the present time, in medical, and indeed in a wider range of biological research, I should refer to the rapidly increasing dominance of chemical methods and chemical ideas. Within the memory of many of us, organic chemistry had still but a small and precarious footing in this domain. To-day, not only has biochemistry firmly established its claim to separate recognition and enrolled a growing army of investigators, but physiology, pathology, immunology, even embryology, are increasingly permeated by chemical ideas and chemical methods, which are yielding a surprising harvest of discovery, in fields which till recently seemed beyond hope of such cultivation. I can permit myself to choose but a few examples.

HORMONES

Research on the hormones is one of the directions in which, at the moment, chemistry can show a record of the most rapid advance and of unforeseen achievement. Twenty years ago, of the hormones then recognised, adrenaline alone had been chemically identified and made by synthesis. Of the others, only thyroxine, on account of its great stability, seemed possibly accessible to structural chemistry; though few could have expected that its structure would so soon be determined and its synthesis achieved. Secretin and the active constituents of the pituitary posterior lobe had been obtained in stable, though highly impure solutions; but for the other ductless glands, even the formation and secretion of hormones by them was a matter of inference rather than direct demonstration. There seemed little likelihood that such hormones would ever be extracted, and the possibility of their isolation for chemical study seemed too remote for consideration.

I believe that the successful preparation of insulin, by Banting and Best, had an influence far beyond that due to its immediate importance for medicine and for the understanding of carbohydrate metabolism, in that it aroused a new spirit of enterprise and optimism with regard to the possibility of obtaining other hormones, which had seemed equally intangible. Insulin itself, being of protein nature, still presents a difficult problem to the structural chemist; but it has been crystallised, and the interesting discovery has now been made (Scott) that the crystals are insulin in combination with metallic ions, normally those of zinc. Since insulin was first prepared methods have been found for extracting the hormone of the parathyroid glands and that of the suprarenal cortex, and it seems probable that the latter has now been obtained in a pure, crystalline form in more than one centre.

A series of hormones from the gonads have, in the space of a few years, been isolated, identified, and in more than one case even made artificially by partial synthesis. These hormones determine secondary sexual characters and cycles of sexual activity; they provide for implantation of the fertilised ovum, and for the development of the placenta and the active mammary gland. The generation which immediately followed Harvey saw the recognition of the ovarian follicles by De Graaf and the description of the spermatozoa by Leeuwenhoek; but even by the end of the nineteenth century such problems as the causes determining the development of accessory reproductive organs, and the nature and causation of the sexual cycles in different animals, had only been touched by the investigations of such lone pioneers as the late Walter Heape. And even till the second decade of the present century, the work of Heape, and of F. H. A. Marshall whom the college to-day honours with its Baly medal, stood almost isolated in this country in its bold attack on what seemed the almost impenetrable tangle of sexual physiology. To-day we are already in clear sight of the ascription of each phase of the female sexual cycle to the action of a separate, chemically identified ovarian hormone; a hormone from a ripened ovarian follicle being responsible for the œstrus in which the uterus is prepared and sensitised for its function, while another, from the corpus luteum, in due course brings about the endometrial hypertrophy, which provides for implantation of a fertilised ovum, or, failing it, terminates in the menstrual breakdown. There are yet many complexities to be unravelled; but these two ovarian hormones, as also a testicular hormone, are already substances of known chemical structure; and the luteal and male hormones have been artificially prepared from different inert sterols. In the case of the œstrogenic and of the male hormone, chemistry can now indicate, in each case, the precise structure of a less active form excreted in the urine, and its relation to that of a more active form obtained direct from the respective gonad, and presumably representing the true, effective hormone.

Behind this immediate control, moreover, and determining the development and successive phases of activity of the gonads themselves, is the anterior lobe of the pituitary body, with its complex of hormones, still beyond the reach of structural chemistry, but ever growing in apparent number, with the progressive recognition of the multiple functions of this little gland. The breath-taking rapidity of experimental progress in this particular field may be inducing a too facile postulation of a new hormone, to account for each new set of phenomena observed; but if observation is accurate and uncoloured by preconception, the true meaning will emerge in due course. In any case it is clear that the anterior pituitary lobe exerts some kind of hormonal control over the development and activities of practically every other endocrine organ, and therewith over almost every phase of growth and of metabolism. Even more mysterious in their meaning are the recent observations of Collip and his co-workers, showing that some of these hormones, on continued artificial injection, provoke in the recipient a resistance to their own actions, which its blood-serum can then transmit to another animal.

We have noted that such of the sex hormones as have been isolated have points of common structure with the sterols, and can, in some cases, be prepared by chemical modifications from members of this group. This brings them into a curious relationship with other substances, also structurally related to the sterols, and possessing intense biological activities of widely different kinds—the antirachitic vitamin D, the cancer-producing constituents of tar, and the heart-stimulating glucosides of the digitalis group. There is evidence, again, that the organisation of the cells of the early embryo into the characteristic fœtal structures is effected by a chemical stimulus, and that the substance concerned also partakes of the molecular pattern common to the sterols, and to so many substances of intense but apparently unrelated activities.

VITAMINS

In the group of the vitamins, which so recently might have been regarded as intangible traces of unstable and probably highly complicated substances, chemistry has found in recent years so successful an application, that three vitamins have already been chemically isolated, including the vitamin D already mentioned, together with the natural precursor of another, and one has already been made by artificial synthesis. In some ways comparable to the action of the vitamins is that newly discovered for choline. The recent work of Best and his co-workers seems to show that the presence of choline, or of the allied betaine, in very small quantities in the diet, is in some way essential for the maintenance of a normal adjustment between the deposition of fat in the liver and its mobilisation from that organ.

OTHER APPLICATIONS OF CHEMICAL METHODS AND IDEAS

Many other examples could be quoted of this increasingly prevalent and successful application of chemical methods, to problems in all departments of medical science, which even recently seemed to be beyond the reach of such attack. Thus, structural chemistry already has its place in immunology and begins to reveal the nature of antigenic specificity. The late Dr. James Collier made reference here last year to the evidence which is being obtained by my colleagues and myself of the intervention of known chemical stimulants, and in particular acetylcholine, in the transmission of the effects of nervous impulses across the gap between the ending of a nerve-fibre and an effector cell or another neurone, apparently throughout the peripheral nervous system. The chemical changes in a muscle accompanying its contraction seemed but a few years ago to be adequately comprised in a cycle of cleavage and resynthesis between carbohydrate and lactic acid. They are now revealed as a highly complicated chain of linked reactions, involving creatine, adenylic acid, and phosphoric acid, in addition to carbohydrates; and

the complexity still grows. Sir Thomas Lewis and his co-workers, whose earlier experiments on the skin vessels of man brought evidence of the release of a chemical substance as the cause of their reactions to injury or irritation of the epidermis, thus making contact with our laboratory investigations on the occurrence and actions of histamine, now trace the pain caused by ischæmia of a muscle similarly to a chemical source.

Conclusions

If we allow ourselves to pause a little and to ponder, standing aloof for a moment from the insistent quest for new experimental data, with its growing multitude of eager followers, we may begin to ask whither it is leading us. We have only to look back to the beginning of this century to realise how all aspects of medicine—diagnosis, treatment, and prevention—have been involved in, and in some directions transformed by the change which has been taking place. But are we really at the beginning of a new, great epoch, or merely involved in one of which the end can already be seen from afar? We can now speak familiarly of the chemical structure, and even the artificial synthesis, of hormones and vitamins of which the very existence was but recently a mere presumption from observed effects, but we have no basis even for speculation as to why a precise structure endows a substance with an effect so potent and often so complex. We can identify in the body the types of cell which are specifically sensitive to acetylcholine, and we can find evidence that impulses, passing down nerve-fibres which end in contact with these cells, excite or inhibit their activity by releasing that substance; we can even make an estimate of the number of molecules of acetylcholine released by a single impulse at a single ganglionic synapse; but we are no nearer to a conception of the meaning of a specific sensitiveness to a substance having that structure, or as to why its presence should augment the activity of one type of cell or inhibit that of another. The complex changes accompanying a muscular contraction are known in much greater detail than those of any other kind of functional metabolism; but there is yet no knowledge clearly relating these changes, or any part of them, to the mechanical event of the contraction. Are we witnessing the early stages of a major advance, in which a finer physical conception of the structure of living matter will ultimately give order and meaning to the knowledge, now so rapidly accumulating, of the chemical changes which accompany vital activities, and of the chemical substances which so mysteriously condition or control their occurrence? Or will physiology find itself brought early to a halt in the line of its present advance, baffled by a complexity which its methods have revealed, but which they cannot yet begin to resolve? None of us, I think, can answer such questions. We must be content to follow patiently what clues we find, and to go forward in the faith of Harvey, that "Nature herself is to be addressed; the paths she shows us are to be boldly trodden; for thus, and whilst we consult our proper senses, from lower advancing to higher levels, shall we penetrate at length into the heart of her mystery."

DEVONSHIRE ROYAL HOSPITAL, BUXTON.—During the year 4004 sufferers from rheumatic diseases have been admitted to this hospital, and the ordinary income has shown an increase of £531 and the expenditure a decrease of £374. The erection of a new wing is under consideration.

AGRANULOCYTOSIS

MENINGITIC SYMPTOMS WITH CHANGES IN THE CEREBRO-SPINAL FLUID IN A CASE OF RELAPSING TYPE

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With Report on the Cerebro-spinal Fluid by

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DIRECTOR OF THE PATHOLOGICAL DEPARTMENT, WEST END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM

THE case to be described is of particular interest in that we can find no previous record of the occurrence of meningitic symptoms, nor of the results of an examination of the cerebro-spinal fluid, in a case of agranulocytosis. Opportunity was also afforded for chemical examination and histological examination of the blood during the prodromal period of a relapse.

The diagnosis of agranulocytosis was made during an illness which started in April, 1934, with vomiting, pyrexia, and ulceration of the gums. After a few weeks the more acute symptoms yielded to injections of Pentnucleotide, but there were subsequent relapses in May, June, September, and December, 1934, and a severe one towards the end of February, 1935. It was during this last attack that definite meningitic symptoms—drowsiness, neck rigidity, and Kernig's sign—were first observed. Each of the previous relapses had been ushered in with pyrexia, languor, and prostration, but no physical signs indicating involvement of the nervous system were detected. During each relapse the granulocytes fell to a very low level; the spleen was palpable and abnormal signs—dullness and crepitations—appeared at the base of the left lung. At no time during the entire course was *Bacillus fusiformis* or Vincent's spirochæte detected in films from the ulcers of gums, throat, or tongue.

CASE RECORDS

The patient was a stout and rather florid woman of 60. The previous medical history was unimportant; she had had chicken-pox and measles while a child, and at the age of 30 "congestion of the lungs." No definite illness had occurred since, but she had suffered intermittently from flatulence, dyspepsia, and constipation, and she showed menopausal obesity. In October, 1933, she developed pneumonia at the base of the left lung with a temperature of 104° F., and was treated with injections of antipneumococcal serum. Recovery was rapid. There was no history of taking amidopyrin.

FIRST ATTACK

During the latter part of April, 1934, the patient had an attack of vomiting (which she attributed to eating oysters) with severe occipital headache, abdominal pain, and constipation. The abdominal symptoms and headache persisted but the temperature remained below 98·4° F.; the pulse-rate varied from 68 to 80. The urine was sterile; no organisms of the typhoid-paratyphoid group were found but agglutination to paratyphoid C was positive up to 1/1600. The spleen was enlarged and palpable; there was dullness and fine

crepitations at the base of the left lung; the abdomen was distended, and the liver edge palpable and tender but there was no jaundice. No rose spots were found, but the skin of the abdomen and thighs was generally affected with a miliaria which could be felt better than seen. On April 28th vomiting recommenced and the temperature rose to 100·6° F. but fell to normal on April 30th. On May 2nd the temperature rose to 101° F., with general drowsiness and increased headache. The throat was œdematous but not ulcerated, the gum margins bright red and injected also not ulcerated. The cranial nerves and optic discs were normal; the knee-jerks normal and the plantar reflexes flexor; the abdominal reflexes present but weak; arm-jerks present; no paresis or hyperæsthesia. The liver was still tender on palpation and enlarged; the spleen enlarged, palpable, and tender; there were no crepitations at the base of the lung.

On May 4th a blood examination showed 5,400,000 red cells and 2200 white cells, of which only 3 per cent. (66) were granulocytes; Arneth's count showed 3 per cent. trilobed nuclear polymorph cells and no horseshoe or rod nuclear cells; 76 per cent. small lymphocytes, 20 per cent. large lymphocytes, and 0·5 per cent. eosinophils. The hæmoglobin was 70 per cent., giving a colour-index of 0·6. The sedimentation-rate was 40 in one hour.

Blood chemistry: non-protein nitrogen 34 mg., urea 7·9 mg., uric acid 4·3 mg., phosphorus 3·5 mg., and calcium 9·2 mg. per 100 c.cm.; sugar 0·065 per cent.; van den Bergh reaction 1/4 unit; alkali reserve 58·3.

A diagnosis of agranulocytosis was made and pentnucleotide administered intramuscularly. After the second injection the temperature fell to normal and remained so for a week; two small rises occurred which reacted at once to injections of pentnucleotide. A large ulcer which had appeared on the left side of the tongue rapidly cleared up, the abdominal symptoms subsided, appetite returned, and the patient's general condition rapidly improved.

FIRST RELAPSE

At the end of May, 1934, the first relapse occurred, being ushered in by the same train of symptoms—i.e., increasing drowsiness, vomiting of bile-stained fluid which contained no free hydrochloric acid, occipital and vertical headache. The gingivitis, confined to the gum margins, recurred with ulceration affecting the gum round the two upper central incisors and extending half an inch from the teeth. Films from the gingivitis and the sloughing area failed to demonstrate Vincent's *B. fusiformis* and spirochæte; there were, however, a considerable number of spirochætal forms present identified as *Spirochæta macrodentium* and *microdentium*, with numerous long, thin thread forms of *B. necrosis*. The breath was exceptionally foul. The clinical appearance of the ulceration differed from the characteristic ulceration of Vincent's angina; it was much less friable, of a hard leathery consistency, and not surrounded with the usual bright injected area seen in Vincent's ulceration.

Under treatment with injections of 10 c.cm. pentnucleotide daily, the patient's condition gradually improved and on May 14th the granulocytes had risen to 34 per cent.

SECOND RELAPSE

The second relapse began in June, again with short preliminary vomiting, prostration, and ulceration of the gums, very furred tongue, and later enlarged cervical glands, palpable and tender spleen and liver-edge, and minute nodular urticaria. The granulocytes again fell to 3·5 per cent. with total white cells 2800 per c.mm.; small lymphocytes 58·5 and large lymphocytes 38 per cent., no eosinophils being detected. Subsequent blood counts yielded 1 per cent. eosinophils with little change in the relative proportion of small lymphocytes and large lymphocytes. Again under treatment with pentnucleotide, the patient's condition improved with a rise in the granulocytes to 23 per cent. on July 24th (Fig. 1).

During the early part of the relapse, daily injections of 10 c.cm. of a preparation of manganese nucleotide was tried but without influence on the temperature, clinical condition or blood count; six injections were administered. Daily injections of pentnucleotide were therefore resumed, and after the third injection the temperature again fell to normal, the general condition slowly improving. The mouth ulceration proved most intractable and eventually penetrated so deeply that the two upper incisor teeth were separated from their attachments and were extracted. The febrile period of this relapse lasted for twenty-four days. During the early part of the febrile period, the pulse-rate was increased to 106–112 with a temperature of 102°–103° F., but the pulse-rate fell to 90–96 six days before the defervescence and remained at 84–90 for three weeks after the temperature had become normal. By August the patient had sufficiently recovered to go away to the seaside.

THIRD RELAPSE

At the end of September there was a short febrile period ushered in by the same symptoms of drowsiness and languor, but passing off in a few days. The blood was not examined on this occasion. There was no mouth ulceration or marginal gingivitis.

FOURTH RELAPSE

In the beginning of December another relapse occurred with the same prodromal symptoms of increasing lassitude, drowsiness, and an attack of vomiting, again attributed by the patient to unsound food. The vomit, as well as all subsequent ones, contained no free hydrochloric acid; granulocytes were entirely absent from the blood. On Dec. 14th a blood count showed: red blood-cells, 4,600,000; white cells, 3900; hæmoglobin 60 per cent.; colour-index, 0·6. Arneth count: polymorphonuclears, 0; small lymphocytes, 74 per cent.; large lymphocytes, 25 per cent. A Price-Jones curve of the erythrocytes gave a diameter curve within normal limits.

Blood chemistry: non-protein nitrogen 31 mg., urea 39 mg., uric acid 6 mg., calcium 9·3 mg., and chlorides 0·390 per 100 c.cm.; urea-concentration factor, 94; urinary

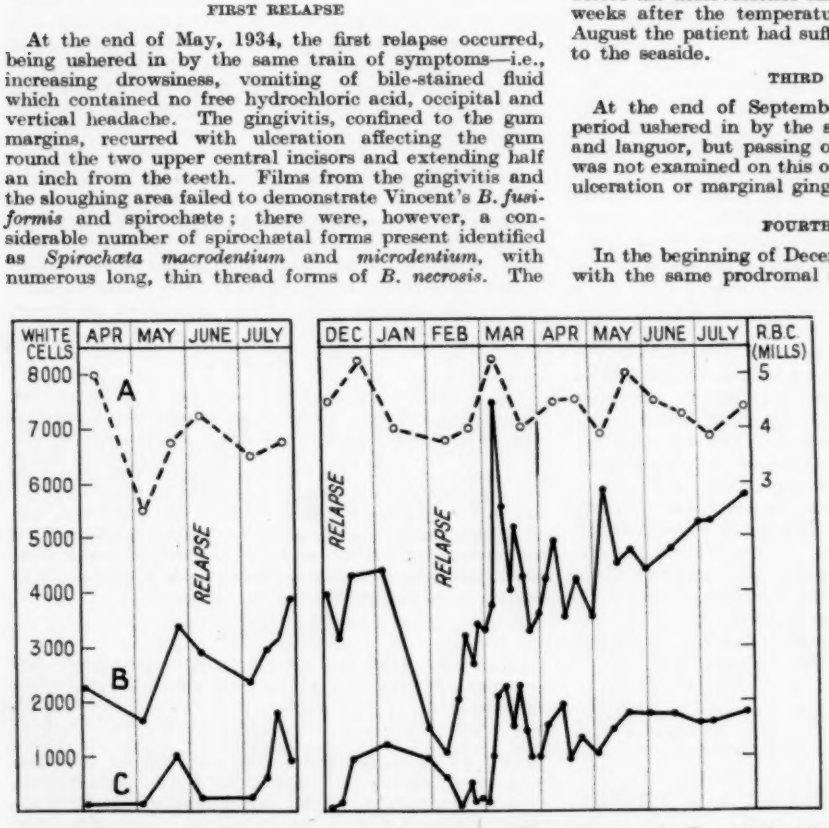

FIG. 1.—Course of blood counts. A = total red cells (millions per c.mm.); B = total white cells (thousands); and C = total granulocytes (thousands).

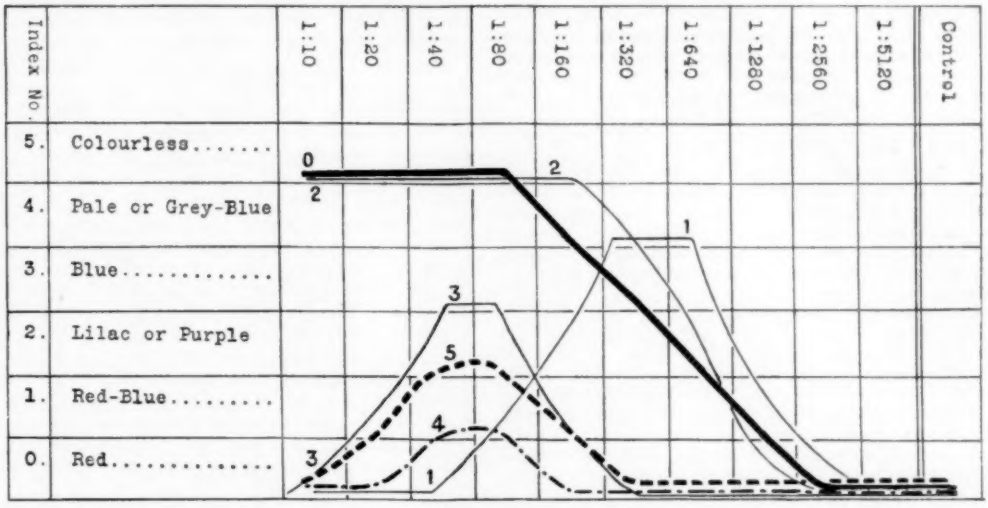

FIG. 2.—Lange's colloidal gold reaction. The black line (0) shows the patient's reaction. Typical illustrative curves (for comparison) are: (1) meningeal field, (2) paretic field, (3) luetic field, (4) normal control, and (5) control with cerebro-spinal fluid containing 0·06 per cent. total protein, but not due to syphilis or disseminated sclerosis.

urea nitrogen, 92 per cent. (urea 3·6 per cent.). Sedimentation-rate 50 per cent. in one hour; van den Bergh ½ unit.

The same clinical signs were present as on previous occasions: enlarged and tender spleen, crepitations at left base, distended abdomen, enlarged and tender liver, minute nodular skin rash. The reflexes were unaltered. The fundi were normal. A large ulcer appeared on the lower lip and the gingivitis returned. The throat was œdematous but not ulcerated; there was mild cervical adenitis.

Pentnucleotide was again injected intramuscularly in 10 c.cm. doses daily and by Dec. 21st the pyrexia had subsided. The blood count gave 5,600,000 red blood cells; hæmoglobin, 75 per cent.; 4297 white blood-cells; granulocytes, 10 per cent. (420); small lymphocytes, 70 per cent.; and large lymphocytes, 20 per cent. By the middle of January the general condition had greatly improved although the state of the heart gave rise to some anxiety—a short, blowing tricuspid bruit developed with canter rhythm. Blood pressure 135/70, pulse 78.

Quantitative urinary examination: output of 1780 c.cm., specific gravity 1011; urea 22 g.; uric acid, 0·346 g.; chlorides, 0·5 g.; phosphates, 2·45 g.; creatinine, 1·7 g.; ammonia, 0·36 g. Nitrogen distribution was within normal limits; 83·5 per cent. urea, 4·9 per cent. creatinine, 1·6 per cent. ammonia nitrogen (low), and 9·1 per cent. residual nitrogen. There was no bile, acetone, sugar, albumin, casts, nor abnormal crystals. A second examination two days later gave almost identical results.

The patient was sufficiently recovered to sit up. The daily injections of pentnucleotide were discontinued and sodium cinnamate (2 c.cm.) injections of 20 per cent. solution given. Hepatex and Radiostoleum were given by the mouth. The blood count improved and the granulocytes rose to 1100 out of 4000 total white cells. Pentnucleotide was given once a week.

FIFTH RELAPSE

The afebrile period continued until Feb. 4th when an attack of vomiting associated with increasing languor and somnolence set in; the temperature rose to 101·5° F., with pulse-rate 100, but fell in 48 hours to normal. The spleen was again palpable and tender; crepitations appeared at the left base; there was severe vertical and occipital headache with intense drowsiness, and a decrease in urine, which now contained a considerable amount of bile. The vomit was bile-stained and contained no hydrochloric acid. Icterus was apparent.

Blood enumeration on Feb. 5th gave 3,800,000 red blood-cells and 936 white cells. Differential count: 60 per cent. granulocytes, 26 per cent. small lymphocytes, 12 per cent. large lymphocytes, hæmoglobin 50 per cent.

Blood chemistry: non-protein nitrogen 32 mg., urea 10 mg., uric acid 6·2 mg., phosphorus 3·8 mg., and calcium 9·2 mg. per 100 c.cm.; sugar 0·07 per cent.; van den Bergh 2 units; sedimentation-rate 50 per cent. in one hour. Urea-concentrationfactor, 261; urinary urea nitrogen, 84 per cent. The urea clearance was highly active, there were no abnormal constituents in the urine other than bile and bile salts.

On Feb. 10th, again about a week after the prodromal lassitude and vomiting, the temperature began to rise. During this, the most serious of all the relapses, the fever, instead of the continued type of former attacks, was of the remittent septic type alternating from 103° F. to 99° F. On Feb. 13th, three days after the onset of the fever, two large ulcers appeared, one on either side of the tip of the tongue, with indurated base, yellowish leathery sloughs and extremely painful. The bacteriological characters were similar to the previous ulcers—spirochætes of mouth type, no fusiform bacilli, numerous long, slender thread forms. The granulocytes practically disappeared from Feb. 13th to 28th. Between these dates four blood counts were made, the granulocytes being 480, 100, 100, 90 (see Fig. 1).

A large indurated area appeared on one buttock near the site of one of the pentnucleotide injections; on incision a little blood and pus escaped. A bacteriological examination gave *Staphylococcus aureus* and *Streptococcus mitis*. There were no spirochætes nor anaerobic organisms present. The abscess healed normally but the incision and drainage had no perceptible influence on the temperature fluctuations.

On Feb. 13th Dr. H. L. Tidy saw the case in consultation and advised blood transfusion; this was carried out on the 15th, a pint of citrated blood being administered intravenously. There was a good deal of immediate reaction with cerebral excitement lasting about an hour but the general condition improved during the next four days with a well-defined drop in the fever. Six days later the pyrexia had assumed the previous remittent type. There was no icterus or bile in the urine. The abdominal distension, enlargement of the spleen and liver, occipital headache, and drowsiness increased; the patient was roused only with difficulty. In spite of continued pentnucleotide injections she became progressively worse and the temperature rose towards 103° F. on Feb. 23rd with the onset of meningitic symptoms. The granulocytes were only 0·5 per cent.; small lymphocytes, 81 per cent.; large lymphocytes, 14 per cent. The total

white cells were 2000; the red cells, 4,600,000; hæmoglobin, 40 per cent.

On Feb. 24th, when the patient was first seen by one of us (C. W.-D.), she was very drowsy and appeared stuporose most of the day but could be roused with difficulty; she then complained of some pain in the neck and occipital region. Temp., 102° F.; pulse, 118; resps. 40. Pupils were moderate in size, equal and reacted normally. Fundi normal. Tongue very furred with slight ulceration. Cranial nerves normal. Moderate neck rigidity; head could not be flexed beyond the vertical line of the body. Kernig's sign positive on both sides. Arm-jerks slight and equal. Knee- and ankle-jerks absent. Plantars flexor. Abdominal reflexes sluggish and equal. Spleen palpable but not the liver. A few crepitations heard at the base of the left lung.

Lumbar puncture was performed. The cerebro-spinal fluid was under slight pressure and was clear to the naked eye. After the removal of 15 c.cm. of cerebro-spinal fluid drowsiness improved, the pulse-rate fell to 80, and the respirations to 32. Dr. Carnegie Dickson carried out an examination of the cerebro-spinal fluid and reported as follows:—

Cerebro-spinal fluid.—Naked eye: clear, colourless, and limpid fluid with no trace of blood or turbidity. Cells: 2 cells per c.mm.; in films of the centrifugalised deposit, they were almost all small lymphocytes with only a very occasional slightly larger mononuclear cell; no polymorph or plasma cells seen. Total protein: 0·06 per cent. Globulin: a trace in excess with Pandy's phenol test; saturated ammonium sulphate, both in the ring and shake tests, gave only the faintest detectable trace of globulin. Chlorides: 0·732 per cent. (normal). Sugar: equal parts of the cerebro-spinal fluid and a 1 in 10 dilution of Fehling's solution gave "normal" reduction, and by MacLean's method the amount present was found to be 0·056 per cent. Lange's colloidal gold reaction: 5 5 5 5 4 3 2 1 0 0. (Paretic type of curve.) (Fig. 2.) Wassermann reaction completely negative. Kahn flocculation test completely negative.

There was, therefore, a moderate but distinct increase in the total protein content, a trace of globulin, and a Lange curve of the paretic type.

At this time the granulocytes were only 4 per cent. with total white cells 2700 per c.cm. (Feb. 23rd); and granulocytes 3 per cent. with 3300 white cells per c.cm. (Feb. 25th). The red cells averaged 4,696,000, with Hb. 78 per cent.

Following the removal of the cerebro-spinal fluid, the patient's condition showed some improvement as regards drowsiness and stupor and the neck rigidity and Kernig's sign gradually passed off. The pyrexia continued with exacerbations and remissions until the beginning of April when a slow defervescence occurred. The pentnucleotide was continued, but in addition Acetylarsan was given by subcutaneous injection. The gradual rise in the total white cell count appears to have coincided with its administration. Nausea and vomiting occurred sporadically (free HCl was absent) until defervescence was established. By the end of May the patient had sufficiently recovered to go out for drives, and on May 25th an electrocardiogram was taken which showed the characters of myocardial impairment.

No further relapse has occurred; the patient is convalescing at the seaside, and is leading a normal but restricted existence. On July 30th the blood count showed 4,400,000 red blood-cells; hæmoglobin, 98 per cent.; 5500 white cells; granulocytes, 32 per cent.; small lymphocytes, 33 per cent.; large lymphocytes, 34 per cent.

DISCUSSION

The results of the cerebro-spinal fluid examination in this case are noteworthy in that the Lange reaction of marked "paretic" type, with slight but distinct increase in the total protein and a trace of globulin, exactly resembles the changes found in the majority of cases of disseminated sclerosis. This result suggests a chronic infection of the central nervous system involving actual nervous tissue rather than the meninges only. In both diseases—disseminated sclerosis and agranulocytosis—an infecting agent is suspected but there is still doubt as to whether the organism is a filtrable virus or a spirochæte.

Certain other features are also of special interest. The series of five relapses, each ushered in with the same train of symptoms—a mild pyrexial attack of twenty-four hours' duration with vomiting and gradually developing lassitude for about a week, after which a mild degree of continued pyrexia supervened, followed four or five days later by development of mouth ulceration and subsequent mild cervical adenitis; total leucopenia with extreme diminution of granulocytes, the red cell count remaining little affected and with no alteration in average diameter. The involvement of the spleen and liver is also noteworthy, but there was no icterus excepting in the last and most severe relapse. It is also somewhat interesting to observe that in the last relapse, which occurred while the patient was under direct observation, the clinical symptoms preceded the fall in granulocytes but the total white cell count fell sharply, which agrees with the observations of Jackson and Parker.[1]

The meningitic syndrome developed only during the last relapse, although headache and drowsiness were pronounced symptoms in each relapse and the patient's family observed the gradual onset of lassitude which preceded the actual prodromal symptoms. The rapid sedimentation-rate, low blood calcium, and high lymphocyte count are also special features of the case. The blood chemistry is mainly within normal variation with the exception of the calcium content.

Of the cases reported by Donald Hall,[2] some developed a swinging temperature; in others the pyrexia was of the pneumonic type; in one case *B. abortus* infection was suspected and in another the possibility of typhoid was considered. In the present case agglutination with paratyphoid C was positive to 1/1600, and with the history of vomiting after oysters was somewhat confusing. In Hall's Case 2 the patient had a relapse in which she died. No history of amidopyrin or allied drugs was ascertainable in our case as in those reported by Plum.[3] Blackie [4] reports a case of agranulocytosis complicating typhoid fever. Fisher's case [5] apparently began with buccal infection, whereas our patient only developed the mouth symptoms after the actual onset of the disease. The use of an arsenic compound in addition to the pentnucleotide is of some importance in bringing about improvement in the blood picture, as is the failure of the manganese nucleotide to influence the blood count.

Throughout her illness the patient had been under the immediate care of Dr. Roberts Harris to whom we are indebted for drawing our attention to the case and for all facilities for investigation.

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TREHERBERT HOSPITAL.—The committee of this hospital are proposing to add a sunlight ward at a cost of £3000 to the female wards. The hospital was built in 1928 at a cost of £32,000, of which £15,000 was provided by the Miners' Welfare Fund committee and a similar amount by the workmen of the area.

APPENDICITIS IN THE AGED

BY HERMON TAYLOR, M.D., M.Chir. Camb., F.R.C.S. Eng.

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OF the thousand cases of acute appendicitis admitted each year to the London Hospital, 1½ per cent.—about one case in three weeks—are over sixty years of age. It has been my duty to operate on a number of these cases, and my observations, together with the results of treatment in 110 cases collected from the hospital records during the last seven years, have led me to modify in these old patients the treatment so successfully applied to younger cases.

Both the patient and the course of the disease are different. Not only is the subject a poor operation "risk" demanding the minimum of manipulation and anæsthesia, but the appendix itself is almost always gangrenous or about to become so. In young people there is a striking variability in the actual condition of the "acute appendix," due to the exaggerated effect on its blood-supply of the twists and folds of the organ and its membranes, so that necrosis is a matter of conjecture in any particular case. In the aged, however, the appendicular vessels themselves are so thickened as to be unable to dilate and relieve the congestion even if otherwise unobstructed, so that gangrene rapidly supervenes in almost all cases. That this is so is shown by the descriptions of the appendix in the 110 cases investigated. The 26 cases seen on the first day of the disease were "engorged"; all but 2 of the 23 second-day cases were gangrenous, 6 with perforation; while the 18 third-day cases were all gangrenous and 13 were perforated. Further, of the 31 cases which recovered without appendicectomy, 27 have been "followed up," and only 2 have had recurrent symptoms, so that in the great majority of these cases the presumption is that the appendix sloughed during the acute attack. Five indeed had subsequent operations, usually for ventral hernia, and the appendix was found to have completely disappeared in each case, except one in which it was reduced to a partially fibrosed organ one inch long.

In the acute attack peritonitis develops as the appendix progresses towards necrosis. Thus in the cases described above, those seen on the first day had a little clear fluid only; by the second day the fluid was purulent, being shut off by adhesions in half the cases, but diffusing over the lower abdomen in the others. On the third day there was diffuse peritonitis in two-thirds of the cases, and abscess-formation in one-third, while all the patients who lived to the fourth day and after had an abscess. The almost constant course of acute appendicitis in old people is therefore—first day, engorgement; second day, gangrene and local peritonitis; third day, perforation with general peritonitis or abscess-formation; fourth day and after, abscess.

TREATMENT AND COMPLICATIONS

The problem of the elderly patient with acute appendicitis therefore is very different from that of the young one. In the latter case the actual condition of the appendix is unknown, but immediate operation is necessary to forestall the possible onset of gangrene; the operative risk is small and appendicectomy is indicated to avoid recurrence of trouble that might occur in a damaged but surviving organ. In the elderly patient, on the other hand, while the condition of the appendix is not in doubt, the certainty of necrosis precludes the possibility of recurrent trouble; the operative risk, however, is considerable and becomes the deciding factor in treatment.

There are two great dangers to be considered: general peritonitis which is the result of the disease, and pneumonia which is the result of the treatment. It need hardly be said that the necrosis of the appendix does not in itself constitute a danger to life, except in so far as it may cause spreading peritonitis. If the process is already localised in a palpable abscess, non-operative treatment is indisputably the best; 15 such cases in this series were treated in this way with only 2 deaths from pulmonary embolism, a complication which could hardly have been avoided by operation. But in the more acute cases with no abscess, seen on or before the third day, the foregoing analysis shows that there is an even chance of the development of diffuse peritonitis, which when once generalised, is invariably fatal. Operation must therefore be undertaken to prevent the spread of purulent fluid over the peritoneal cavity, but for this purpose it is *not necessary* to remove the appendix. A drainage-tube placed accurately alongside it will prevent the pressure of fluid exudate which alone causes its diffusion. Adhesions will be able to form, and both the fluid and the necrotic substance of the appendix itself will be discharged on to the dressings.

At first sight the difference between this procedure and actual removal of the appendix may seem to be slight, but it must be remembered that with an old patient an operation *definitely planned not to remove the appendix* is a very different matter from one designed to remove it if possible. In the former case only a small incision is necessary over the iliac fossa, big enough to admit first the exploring finger and then the drainage-tube, and no disturbance of intestines is occasioned. Moreover, the muscular relaxation of the abdominal wall need not be complete, so that modifications in anæsthesia can be employed with great benefit to the patient. On the other hand, removal of the appendix necessitates complete muscular relaxation and general or spinal anæsthesia is necessary, with the attendant risk of chest complications. The wound must also be of adequate size, and all protective adhesions are inevitably destroyed as the cæcum and appendix are delivered to the surface. Not only therefore is the immediate operative strain on a frail subject greater with the anæsthetic and manipulations involved in removing the appendix, but the final result is prejudiced by the added risks of spread of peritonitis at the time of operation, and of pneumonia following the longer and deeper anæsthesia required. Particularly is this the case when operation is performed on the critical second and third days when early adhesions are beginning to form. Of the fatal cases 70 per cent. were operated on at this stage and the post-mortem records show many in which peritonitis, actually seen to be localised at operation, has become general after the disturbance involved in appendicectomy. Old people seem to be able to make one effort to limit the peritonitis by adhesions, but if these are broken down the pus will spread, even though the source of infection is removed.

RESULTS OF VARIOUS PROCEDURES

These points are well illustrated by the results of the various methods of treatment (by many different surgeons) in the 110 cases investigated. There were

in all 22 deaths (20 per cent.) and autopsies were performed in 15 cases. Discounting 2 cases not operated upon, and 4 cases that were moribund on admission to the hospital, there were 16 deaths, all of which followed removal of the appendix. Of these 9 were "ill" patients with purulent fluid in the pelvis, but 7 were described as "not ill," having only a slight rise of temperature and pulse and no spreading peritonitis. Eight deaths were due to general peritonitis with paralytic ileus. In none of these was the fluid generalised at the time of operation, while in 4 of them the note made at operation stated that the fluid was definitely shut off by adhesions. It is fair to assume that certainly 4 and probably more of these cases might have been saved by the more conservative operation. There were 4 deaths from broncho-pneumonia—2 after spinal and 2 after ether anæsthesia—and there can be no doubt that the anæsthetic was at least a contributory factor in the onset of this fatal complication. The remaining deaths were due to pulmonary embolus, septicæmia, mechanical intestinal obstruction, and persistent intestinal fistula—the 3 latter following a prolonged and difficult appendicectomy in each case. The 16 deaths after appendicectomy were due therefore not to any fault in technique at operation, but at least in part to the type of operation performed.

Of the 88 cases that survived, 13 were appendix abscesses that recovered without operation. In 57 cases the patients were described as "not ill"; but 18 were "ill," 13 of whom were saved by simple drainage, while 5 had the appendix removed. The statistics can best be appreciated from the practical standpoint of the original condition of the patient, whether he was "ill" or "not ill," clinical terms based on the aspect of the patient, pulse-rate, and general toxicity. Of 64 patients described as "not ill" the appendix was removed in 59 cases with 7 deaths—an unnecessarily high mortality of 12 per cent.—while simple drainage was performed in 5 cases without a death. But of the 31 "ill" patients the mortality after appendicectomy was 64 per cent. (14 cases with 9 deaths), while after simple drainage it was only 24 per cent. (17 cases with 4 deaths), although these latter were the most advanced cases of the series, including the four described above as moribund on admission.

The possibility of intestinal fistula formation has been considered. There were 2 instances of this complication (one of them fatal) both of which were due to sloughing of the cæcal wall after a difficult operation for removal of the appendix. In no case was simple drainage followed by a persistent fistula.

The case-records bring out another point—the greatly increased death-rate in those who had a paramedian incision. Of the cases operated on by this route 40 per cent. died, as against 10 per cent. after a right iliac incision. Descriptions of the autopsies after paramedian incision in these old people show a large proportion of grossly infected wounds, with extensive suppuration of the abdominal wall, and 3 cases of secondary rupture of the wound. Moreover, it is in the cases with a paramedian incision that the fatal spread of pus which was localised at operation is most striking. Allowance must of course be made for those cases where the diagnosis was in doubt, and the paramedian incision was made for exploratory purposes, but even so the best chance of survival for the patient is provided by drainage of the appendix area through a stab wound over it, with the minimum of peritoneal disturbance. In point of fact, however, the diagnosis was rarely in doubt in these cases, the great majority of which gave the classical sequence of generalised abdominal pain, vomiting, and tenderness in the iliac fossa. A muscle-splitting incision over the appendix big enough to admit the diagnostic finger and the therapeutic tube cannot subsequently rupture and its infection is of no consequence. It is a further advantage after this incision in an old, apathetic patient, to be able to get him up on a couch to stimulate his waning interest in life, without risk of bursting the wound.

With regard to the anæsthetic, in this series of cases it has been almost exclusively either ether or a spinal novocaine preparation. The incidence of pulmonary complications was about the same with each method. However, in these cases, appendicectomy, if possible, was the object of the operation, and complete relaxation of the abdominal wall has been demanded of the anæsthetist. But if operation be undertaken with the specific purpose of drainage only, relaxation need not be complete Gas-oxygen anæsthesia after omnopon-scopolamine premedication can be used and by the judicious use of carbon dioxide the anæsthetist can control the ventilation of the lungs. By this method congestion of the lungs is diminished rather than increased, and the bronchi are not inflamed by irritant vapours, so that the likelihood of post-operative chest complications is reduced to the minimum.

CONCLUSION

In conclusion, it may be repeated that, on account of the stereotyped progress towards necrosis in three days of the acute appendix in old people, the treatment becomes simplified. While there is nothing to be gained by removing an appendix that will remove itself, the conservative operation of simple drainage is attended by a much lower mortality, complications are fewer, fistula does not develop, convalescence is easier, and the patients do not get subsequent trouble.

I should like to acknowledge my indebtedness to the authorities at the London Hospital for their kindness in allowing me to publish particulars of their case records, and to Sir James Walton for his advice and criticism.

SURGERY IN THE TREATMENT OF PRIMARY SKIN CARCINOMA

By H. T. Simmons, Ch.M. Manch., F.R.C.S. Eng.

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In the vicinity of the radium centres the treatment of the various types of primary carcinoma of the skin is being undertaken mainly by the radium officers and constitutes their most successful class of case; but elsewhere in the country surgery still remains the only practical treatment available. Quite a number of the patients that have been submitted to surgical treatment are referred eventually to a radium centre in the hope that radium may remove the recurrent nodules of growth that have appeared in the operation scar, and, as second attempts at the treatment of malignant disease are notoriously poor and admittedly so, it has seemed worth while to examine these cases in some detail in order to discover, if at all possible, the fault in the original operation.

During 1934 there were referred to the Christie Hospital and Holt Radium Institute 5 cases of

primary epithelioma of the skin and 12 cases of rodent ulcer that had been treated surgically elsewhere and were showing recurrence in the area of the operation. Occasionally the diagnosis of malignancy has been missed, a microscopical section has not been examined, and the follow-up of the patient omitted. This is sufficiently common to warrant the dogmatic statement that every hyperplasia or indolent ulceration of the skin that comes to operation should be excised as though it were malignant, have the complete lesion examined by a pathologist, and be carefully examined at monthly intervals for at least a year, attention being directed particularly to the operation scar and the regional lymphatic glands.

When there is recurrence we find that almost always the operation scar is linear and the nodules are situated about the middle, never near either end. Usually a few months have elapsed since the operation and the regional lymphatic glands show some enlargement, unless the carcinoma is arising in fibrosed tissues such as an old burn or lupus scar. It is very definitely true that metastatic involvement of lymphatic glands is commoner and earlier in these cases with ineffectual treatment of the primary lesion than in those in which a cure has been obtained. As yet the treatment of the lymphatic glands lies in the province of the surgeon, but why is radiotherapy displacing surgery in the treatment of the primary lesion when it is well recognised that surgical excision offers a speedy and certain cure, excepting those cases in which anatomical consideration, or the general condition of the patient demands radiotherapy?

FIG. 1.—Epitheliomatous ulcer arising in old burn scar. Three previous operations.

FIG. 2.—A year after excision and immediate Thiersch graft.

The answer seems to be that radiotherapy is observing the principles taught by the surgery of malignant disease, whereas the surgeon, haunted by the question of repair, cuts down the margin of safety and pays the inevitable price. Mr. A. H. Burgess used to teach that one surgeon should remove the cancerous breast and another deal with the closure of the wound, so that the skin removal should be adequate and the judgment of the extent of its removal not affected by the problem of repair. The lack of application of these principles and teaching is shown by the nodules recurring in the centre of the scar, suggesting that the usual elliptical incision has failed and should be condemned.

Given a lesion one centimetre in diameter an effective dose of gamma radiation would be applied over a circular area three centimetres in diameter; or, in other words, with a lesion the size of sixpence the area effectively treated would be the size of a five-shilling piece. Every surgeon teaches that a malignant nodule should be excised with a margin of healthy skin of at least one centimetre in width and this means that if the lesion is the size of a sixpence the area marked out for excision must be the size of a five-shilling piece, the marginal difference of the two coins being only one centimetre. Is this what is actually done in practice? As regards depth, again one centimetre from the deepest part of the lesion is the rule and particularly here must care be taken, erring on the side of taking too much and including the deep fascia if that comes anywhere near these limits. Some of the recurrences undoubtedly come from the depths of the lesion, and here surgery should be able to improve on radiotherapy, especially the mould application of radium. Repair of the raw area is a secondary consideration and is best attempted by excising triangles of skin at opposite ends of a diameter of the area which lies along the natural line of stress in the skin, and then a little undercutting will allow approximation of the edges of this secondarily elliptical skin incision. Failing this, primary or secondary Thiersch grafts give excellent results, depending on the depth of the wound, and if the deep surface be hard so that, as on the skull, firm pressure can be obtained, an immediate Wolff graft takes perfectly.

Diathermy is proving a pitfall in that, although the area necrosed is larger than appears at operation, this fact is tending to excuse, in the mind of the operator, a non-radical procedure with necessarily poor results; and, unless frankly palliative, the area treated should be as extensive as surgery dictates, the little extra obtained being credited to the diathermy and not made to appear on the debit side. Watching the after-results of extensive diathermies I have been agreeably surprised at the rapid and extensive repair of the lost tissues, but the process slows very rapidly towards the centre, so that for a long time the patient has a raw area in the middle of his diathermy scar. This area slowly heals, but in a considerable number of cases there has been a sudden and inexplicable growth of squamous carcinoma, commencing at the edge of the ingrowing epithelium, in cases that the operator felt sure he was well beyond the limits of malignant disease. Particularly has this been noticeable in diathermies in tissues already scarred and it is sufficiently striking to suggest that squamous epithelium growing over a large cicatricial area tends to become anaplastic the further it grows from the normal skin and normal blood-supply. Accordingly, we have resorted to wide surgical excision with immediate Thiersch grafting and the results are more encouraging, especially as careful preparation of the carcinoma with eusol

dressings renders the field of operation sufficiently aseptic to ensure a large percentage of successes with the grafting.

The accompanying photograph (Fig. 1) is taken from a case of squamous epithelioma, arising on the scar of a burn received 24 years previously. During 1933–34 the patient had two surgical removals and one diathermy of the ulcer at other hospitals. In July, 1934, I excised the ulcer, applying an immediate Thiersch graft. Fig. 2 shows the condition a year later, with no evidence of recurrence.

CONCLUSION

From this review it appears that a primary elliptical excision of a skin carcinoma tends to encourage the surgeon to trespass on the margin of safety and that better treatment is obtained if the tumour is first excised according to recognised surgical principles in the treatment of malignant disease, and the repair is regarded as a second and distinct problem of plastic surgery.

Clinical and Laboratory Notes

UNDULANT FEVER TREATED BY PROTEIN SHOCK

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Manson-Bahr [1] recorded in 1933 a case of undulant fever successfully treated by the intravenous injection of T.A.B. (typhoid and paratyphoid organisms) "as a means of inducing others to try out this method of treatment." Encouraged by his article we applied the method to a case recently under our care, with equally successful results.

The patient, a male aged 50, who had not been abroad, had suffered for the last eight years from periodical attacks of "ague," occurring two or three times a year. He had been accustomed to drink one and a half pints of milk a day for several years, warmed but not boiled. Up to three years ago the milk was, the patient understands, pasteurised, but for the last three years it was not pasteurised. Six weeks before admission he had ague attacks culminating in an acute illness, described as "acute influenza," characterised by prolonged pyrexia with severe headaches and almost daily rigors. The temperature rose on occasions to 105° F., and was usually between 99° F. and 102° F. It was suggested that he was suffering from a streptococcal infection.

The patient was admitted to the Royal Masonic Hospital on April 17th, 1935, and the same evening the temperature rose to 103° F., with pulse-rate 140 and respirations 24. The temperature gradually subsided to normal during the next five days, but rose again to 100·4° on April 26th and to 102·4° the following day with another rigor. During the rigor there was a feeling of coldness, chattering of the teeth, shivering, shaking of the limbs, followed by flushing of the face, throbbing in the head, lacrymation, and sweating. No enlargement of the liver, spleen, or lymphatic glands was detected. A blood count at the height of the rigor gave the following result: red cells, 4,290,000; hæmoglobin, 80 per cent.; colour-index, 0·9; white cells, 11,000; polymorphonuclears, 56·7 per cent.; eosinophils, 1·3 per cent.; small mononuclears, 37·3 per cent.; large mononuclears, 4·7 per cent. No malaria parasites were found. The urine showed no abnormality and was sterile. The serum agglutinated *Brucella abortus* in a dilution of 1 in 3000 (375 standard agglutinin units).

The patient had also suffered from a rash for the last ten years, which was diagnosed by Dr. A. C. Roxburgh as the adult type of urticaria pigmentosa.

The temperature did not fall to normal until six days after the second rigor. On May 4th, having previously ascertained that the blood pressure and electrocardiogram were within normal limits, an intravenous injection of 100 millions T.A.B. vaccine was given. Within an hour a severe rigor occurred, the patient was much collapsed and cyanosed and appeared very ill. The temperature rose to 104° F. and the pulse-rate to 112. A subcutaneous injection of 1 c.cm. Cardiazol-ephedrine was given, and repeated twice at six-hourly intervals. The condition of the patient had considerably improved an hour after the rigor, which he said was more severe than those he had previously experienced. He vomited two or three times and complained of abdominal pains which persisted for a few days. The subsequent course was uneventful. The temperature fell to normal in four days and did not rise again. The serum was examined 19 days after the T.A.B. injection and the agglutination titre was now only 1 in 50 (6 standard agglutinin units). The patient left the hospital on May 25th and 17 weeks later reported that he was quite well, had returned to work, and was also playing tennis.

Although in this case the protein shock therapy had a beneficial result, the severity of the reaction might render it dangerous in the presence of cardio-vascular degeneration.

Our thanks are due to Dr. G. L. Eastes for carrying out the pathological investigations.

[1] Manson-Bahr, P.: THE LANCET, 1933, i., 1179.

BILATERAL DOUBLE URETER

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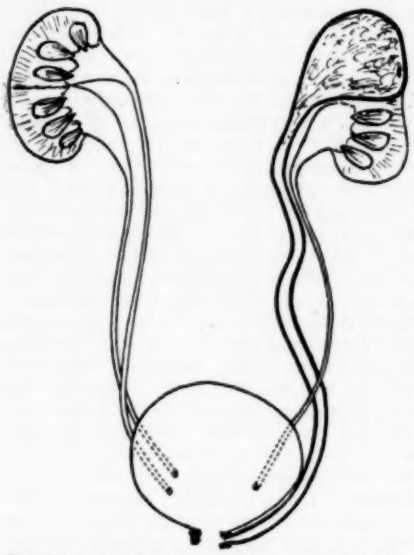
Double ureter is one of the commoner anomalies met in the kidney and is readily understood if one considers the development of the organ. The anlage of the ureter appears as a bud from the lower end of the Wolffian duct. It has an inherent tendency to divide, which it does normally when it reaches the kidney rudiment, forming first the major, and when these themselves divide, the minor calyces. Division may however take place prematurely, and we have various degrees of double ureter varying from both opening into the bladder by a common inlet to their union a little below the pelvis of the kidney. Division of the anlage may take place actually before the bud has formed, resulting in two ureters opening into the bladder separately. Cases of unilateral duplication of the ureter are well known; but cases of bilateral double ureter are rare and worthy of record. The following is such a case.

Mrs. A., aged 70, was admitted to hospital complaining of a blood-stained vaginal discharge which had lasted three months. Adenocarcinoma was revealed by curettage and complete hysterectomy and bilateral salpingo-oöphorectomy was performed. Ten days after operation she developed acute cystitis, and this persisted for three weeks despite treatment. She then developed abdominal distension, became gradually weaker, and died.

Post mortem diffuse peritonitis was found, with areas of acute ulceration in the colon and lower rectum and an acute cystitis. In addition, there was a double ureter to each kidney, opening from their upper and lower parts (see Figure). On the right side the ureters opened separately into the bladder, the openings lying beside each other at the right end of the interureteric bar. On the

left side the lower ureter opened into the bladder through an orifice at the normal site of the ureteric opening. The upper ureter opened into the urethra at its exit from the bladder and appeared to run through the fibres of the sphincter urethræ. This tube showed much dilatation, measuring 2 cm. in diameter at one part. It also showed evidence of inflammation of long standing, with fibrous thickening of its wall and periureteritis. The related upper half of the kidney was replaced by a thick sac containing a quantity of pus. Attached to the lower part of the sac were the remains of the left kidney which appeared quite normal and very well demarcated from the infected upper half. The ureter ran from it in a normal manner and crossed in front of the infected ureter a little above the pelvic brim.



Drawing (semi-diagrammatic) to show the origins of the double ureters and their point of entry to the bladder.

The interesting features in this case are: (*a*) The bilateral double ureters which opened symmetrically into the bladder, the upper one on the left side opening into the urethra. This ureter could empty itself only when the sphincter urethræ was relaxed—i.e., during actual micturition. Hence it had become greatly distended and later infected, the kidney being ultimately replaced by a bag of pus lined by granulation tissue. (*b*) The sharp fibrous tissue demarcation between the upper and lower halves of the kidneys on either side is interesting. This was noted also by Legueu and Luque,[1] who concluded that these subjects should be considered as having four distinct kidneys although those on each side were welded together forming an apparently single kidney. Legueu demonstrated that their vessels were distinct. Luque, who diagnosed the condition during life by urography, showed that the fluid eliminated by each of the four ureters was quite different in quality and in chloride and urea content. This is interesting, for it means that if a diseased condition of the kidney tissue excreting into one of the four ureters be found clinically, the treatment need not be complete nephrectomy on that side but rather a heminephrectomy with excision only of the diseased half, leaving the blood-supply of the remaining half. It is noteworthy that the ureter which opens lowest in the bladder comes usually from the higher of the two halves of the kidney. (*c*) The patient lived to the age of 70, apparently without symptoms, although infection of the affected ureter and kidney had obviously been present for a long time.

My thanks are due to Prof. James Hendry for the clinical notes of this case and to Prof. J. Shaw Dunn for his help.

[1] Luque, T. M.: Urol. and Cutan. Rev., 1932.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF OBSTETRICS AND GYNÆCOLOGY

AT the meeting of this section held on Oct. 18th, with Dr. W. FLETCHER SHAW, the president, in the chair, the subject of discussion was the treatment of

Breech Presentations

with special reference to cases of extended legs and arms.

Dr. J. W. BURNS (Liverpool) opened the discussion by considering the complete or fully flexed breech. In most breech cases seen in hospital, he said, it was impossible to demonstrate the presence of any one of the ætiological factors given in works on obstetrics. He doubted whether the incidence of contracted pelvis was much greater in cases with this form of presentation than in vertex presentations; at least contracted pelvis—except in its more gross form—could not be regarded as a cause of breech presentation at 36 weeks. Certain abnormalities—for example, placenta prævia and such conditions as hydrocephaly and anencephaly—should be eliminated before proceeding to version, since some of these abnormal conditions were more readily dealt with if the presentation remained a breech. Prophylactic external version carried considerable risk of separation of the placenta, and the danger was increased under anæsthesia, when too forcible manipulations were liable to be used; sometimes stillbirths resulted from this operation. Version should be performed not later than the thirty-sixth week, if that could be managed and preferably without an anæsthetic; failure suggested extended legs, and in these cases failure was liable to occur even under anæsthesia. In the management of the first stage, in addition to the usual measures, Dr. Burns advocated the use of an abdominal belt as soon as labour commenced; a very efficient adjustable pattern devised by Sister Miller was used at the Liverpool Maternity Hospital. The uterus and abdomen should not be handled throughout the second stage for fear of encouraging separation of the placenta. It was not known at what stage of delivery the placenta ceased to function, but he believed the placental body left the uterine wall much sooner than was usually thought; in breech cases it ceased to supply oxygen to the infant from the moment the head was passing through the pelvic brim. As soon as the perineum was distended by the descent of the buttocks, the patient was placed in the cross-bed posture, with her legs in the lithotomy position, Clover's crutch being very useful. When the buttocks and feet were distending the vulva, the feet were secured and lifted over the perineum. When the umbilicus was born, a loop of the cord was pulled down and then left. Usually the scapulæ were born spontaneously, or with the assistance of some traction on the trunk; if the flexed arms did not follow immediately, they could be hooked out with the fingers. Describing his method of delivering the head, Dr. Burns said he had the mother's buttocks well over the edge of the bed, and as soon as shoulders and arms were born, the child was allowed to hang from the vulva; the weight of its body acting through

the neck brought the suboccipital area of the skull in contact with the back of the symphysis if the head was above the brim, or the descending rami of the pubes if the head was in the pelvic cavity. The head was thus caused to rotate on its horizontal axis, so bringing the suboccipito-frontal diameter through the brim. The body-weight maintained the head in the position of flexion while in the pelvic cavity, and this flexion was maintained during delivery. The attendant should stand sideways to the patient's vulva, using only one hand to grip the legs; the traction should keep the child's neck taut, so preventing the occiput from receding into the pelvis. This traction was maintained and the child lifted upwards and outwards through 180°. If delay occurred, suprapubic pressure exerted by the operator's left hand to the head would bring about delivery. This method helped to eliminate undue haste, as the operator must wait until the suboccipital area of the fœtal skull could be seen in the subpubic angle before delivery was attempted.

Dr. C. McINTOSH MARSHALL, after a short historical survey of the methods for delivering the buttocks, submitted some conclusions reached from the delivery of over 40 cases of primigravidæ in which the legs of the fœtus were extended along its abdomen. No infant under 5 lb. in weight was included in the series spoken of; in a number unsuccessful attempts at external version had been made. In only one case was labour induced, and in that the patient had gone beyond the expected date. The cases were studied especially in regard to (1) dilatation of the cervix, and (2) the descent of the buttocks. In emergency cases one careful examination was made for the purpose of determining the degree of roominess of the pelvis. Three important observations had emerged: (1) in 40 out of 42 cases, as a result of the use of the natural powers alone, the buttocks arrived completely on the perineum before either mother or her fœtus showed any sign of distress; in some this occurred just as assistance was about to be offered. (2) In no case did the mother show signs of distress. (3) In no case was there distress when the fœtus was issuing from the vulva. It was the perineum which offered the greatest resistance to the buttocks. Dr. Marshall declared that while early prophylactic bringing down of the legs might be an excellent method of treating these cases, it was unnecessary. Forty of the 42 cases were delivered with the legs in the fully extended position; all were alive at the moment of the birth of the buttocks. One infant was stillborn, the cause of the death remaining unexplained. Another died from laceration of meningeal septa; there was great difficulty in delivering the head through a contracted pelvis. The fœtal mortality was 4·76 per cent. Dr. Marshall then exhibited a cinematograph film showing the delivery of four infants in the Liverpool Maternity Hospital.

Dr. DONALD ROY said his contribution described a routine evolved by the ward sisters and the ordinary hospital residents at the York Road Lying-in Hospital. During pregnancy external version was attempted at varying dates between the thirty-first and thirty-eighth weeks in all cases of breech presentation in primigravidæ, and in many multiparæ too. Taking as a sample year 1930, external version was attempted in 59 cases—i.e., 29 primigravidæ, 30 multiparæ—and in all but 3 (primigravidiæ) it was successful. If version failed, even under general anæsthesia, the cases were left either to go into labour at term as breech cases, or in some cases labour was induced, either prematurely, at 36 to 38 weeks, or at term. In ten years 155 cases with breech complications were recorded, excluding very small premature infants, twin presentations, macerated children, fœtal deformities, antepartum hæmorrhage, and version performed because of difficulties of labour. When labour occurred, the legs (which, in 63 per cent. of primigravidæ and 41 per cent. of multiparæ were extended) were nearly always left to be born naturally, or, at most, flexed at the vulva when born to the knees. Seldom was any difficulty or delay experienced. The average duration of the second stage in these 155 cases was 1 hr. 54 mins. in primigravidæ, and 48¼ mins. in multiparæ. In 3 of the former and 1 of the latter groin traction was used, and in 2 the legs were brought down. Dr. Roy and his colleagues considered, as the result of experience, that the risk of trouble from extension of the legs when antenatal work was properly done had been grossly exaggerated. The important factor was the size of the child in relation to the size of the pelvis. Cases of impaction of breech could be avoided by early version or by the induction of premature labour. Both arms were extended in 53 per cent. of the primigravidæ, and one arm in 9 per cent.; both arms were extended in 47 per cent. of the multiparæ, and one arm in 3 per cent. of them. In 43 out of 48 cases in primigravidæ with extension of one or both arms, one or both had to be brought down. Extension of the arms was present and was the chief cause of difficulty in all the 11 cases of stillbirth from difficult labour. Dr. Roy considered that extension of the arms was the most important and dangerous complication of breech delivery, because of its frequency and the large proportion of cases in which help was needed. Delivery of the head was hastened by jaw and shoulder traction in 15 primigravidæ and in 6 multiparæ, and by means of forceps in 1 primigravida. Summarising his results, he said that among 77 primigravidæ there were 7 stillbirths and 1 neonatal death, a fœtal mortality of 10·3 per cent. In 78 multiparæ there were 7 stillbirths, a fœtal mortality of 8·9 per cent. There were no maternal deaths, and no cases of Cæsarean section for breech presentation.

Mr. ALECK BOURNE said he had always felt that in a large number of the cases it was better to bring the legs down. Cases of impacted breech occurred due to extended legs, resulting in obstructed labour; there might also be extended arms. In a group of primigravidæ with soft parts not easily dilated and with large babies, the legs would not come down when the os was fully dilated. By bringing them down early opportunity was given to bring the arms down by putting the hand a little higher. Sometimes he had slipped a loop of tape over the wrists to keep the arms down. If arms and legs were brought down at the same time, one of the chief causes of breech mortality was avoided. He seldom experienced trouble with delivery of the head. Rather than risk an impaction with obstruction he would bring legs down even when apparently unnecessary.

Mr. EARDLEY HOLLAND said he had been surprised to find that, as a result of a large number of post-mortem examinations on fœtuses born dead as a consequence of breech labour, there was evidence of excessive cranial compression in 88 per cent., with tears of the tentorium and intracranial hæmorrhage. The teaching in his student days was that after the body of the fœtus had been born it was imperative that the head should be delivered quickly, as otherwise the fœtus would die of asphyxia following upon cord compression. Investigation had shown how erroneous was that teaching. When morphia and

scopolamine were used to relieve the pain of labour, it was found that the fœtus could remain for as long as 20 minutes in a state of complete apnœa, and then breathe naturally. He had accordingly urged slow delivery of the head, and also perineotomy; insisting that the main problem was delivery of the fœtal head in such a way as to obviate its compression. He did not think that external version was dangerous in the hands of the educated obstetrician. Provided the breech had not sunk into the pelvis, the first thing to do was to compress the fœtus between head and breech, rolling it up like a hedgehog. He was against bringing down the legs as a regular practice; unless the fœtus was very large, that was not usually necessary in multiparæ. If, after the breech had come down on to the pelvic floor, there was a delay of half an hour, he made it a rule to bring down the leg so as to steer clear of an impacted breech.

Mr. G. F. GIBBERD confessed to depression about the results in breech cases. Some said that in these cases the great difficulty was due to the arms, others feared the danger to the head. His view was that even if there was difficulty in delivering the arms while the head was easily delivered, there were three chances to one that at the autopsy intracranial hæmorrhage would be found. To lower the present mortality from this cause he could only suggest external version, which was not a dangerous procedure. In his own hospital, in 204 external versions the stillbirth-rate was 2 per cent. An occasional cause of death in the fœtus was atelectasis; when the fœtus was born, its head should be held lower than its feet; otherwise if fluid was present in the trachea it would enter the alveoli.

Dr. G. W. THEOBALD said that every obstetrician should have a constant technique. When once the breech came down to the outlet and the cervix was fully dilated, the patient should be anæsthetised and delivery carried out. He contended that it was wrong to bring down the anterior arm first; the posterior arm should receive first attention. If the operator placed one hand in the vagina, kept the head flexed, and pushed the head through from above, intracranial hæmorrhage would be avoided. That meant that the patient must be thoroughly anæsthetised; a half-anæsthetised woman was more difficult to deliver than one fully conscious. When the breech had been delivered it was important to squeeze the chest and to keep it constricted until the air-passages were cleared.

Dr. W. H. F. OXLEY said that in his long experience of general practice he had had a large number of breech deliveries. Many were impacted with extended legs, which had been left too long. His cases were looked after by midwives, not by doctors. In all primiparæ he brought the legs down; if this were not done as a regular procedure, one would not be able to bring down the legs in difficult cases without tearing the vagina. He always arranged to be called when the os was fully dilated. The legs having been brought down, the midwife located the child's head and pushed it down without traction. He did not pull on the trunk of the fœtus. He had delivered over a thousand cases with extended legs in ten years, with good results.

Mr. A. J. WRIGLEY agreed that breech presentations should be regarded as a warning of other possible complications. At St. Thomas's the breech figures had definitely improved since the York Road technique, described by Dr. Roy, was introduced. Recently Dr. Marshall's methods had been adopted there, since when there had been no case of stillbirth nor of neonatal death.

Mr. J. D. S. FLEW spoke in favour of early version. In 600 cases of external version, of which 200 were between the thirtieth and thirty-fourth weeks, there was no instance of labour arising from the version.

Miss J. M. MOORE said that in 1934, at the Royal Free Hospital, breech cases in primigravidæ numbered 26; only 4 responded to external version between the thirty-sixth and thirty-ninth weeks, and they were subsequently delivered as vertex cases. That was a poor result for version. In some the condition was not diagnosed until the patient went into labour, and in some others version was contra-indicated because of engagement of the breech, or because of toxæmia, and there was one case of primary thyrotoxicosis. Epiphysiotomy was done in 23 out of 30 cases. The stillbirth-rate was 2 per cent.; the gross mortality of neonatal and stillbirth cases was 16·6 per cent.

Prof. SCHILLER (Vienna) said that in his clinic much more attention was being paid to the condition of the fœtal head than to that of asphyxia. A colleague of his had shown that asphyxia played no important part in causing death in the fœtus. In 90 per cent. of the cases investigated, hæmorrhage in the tentorium could be proved, while the deaths from asphyxia did not number more than 2 to 3 per cent. In his institution pituitary extract was very frequently used; it was regarded as "pharmacological forceps." If any traction was considered necessary, it was exerted on the neck, not on the feet, and even this was not done until after the use of pituitary extract.

The PRESIDENT was surprised that no speaker had mentioned the practice of ironing out the vagina in order to ensure plenty of room there, a procedure stressed by Potter of Bufflalo, who had one of the largest obstetric practices in the world.

Dr. BURNS, in reply, said he believed many babies were killed at the vulval orifice by injury to the base of the brain. In selecting the legs for traction he was anxious about the neck vertebræ; in his cases there was no evidence of injury to these. It was important in these matters to legislate for students and beginners, not for experts.

SECTION OF COMPARATIVE PATHOLOGY

A MEETING of this section was held on Oct. 23rd, when Prof. J. C. G. LEDINGHAM, F.R.S., gave his presidential address on the

Comparative Study of Clinically Allied Viruses: Some Unsolved Problems of Edward Jenner

He said that he proposed to consider the pock diseases with particular reference to the problems they present to the student of comparative pathology and fundamental virus research. Since Jenner made protection against small-pox possible great theoretical advances had been made, and we could now with fair certainty speak of and manipulate the actual virus agent; but the only advance which we could register in Jenner's sphere, an advance as yet only tentatively exploited, was the rendering of Jenner's prophylactic more æsthetic and acceptable by administration of the virus of vaccinia in its purest form freed entirely from associated organisms.

The origin of the practice of variolation was lost in antiquity but certainly went back a thousand years or more before the Christian era. Its discovery was doubtless the culmination of frequently and independently observed phenomena suggesting that small-pox was not likely to be contracted twice and

that infection entering the body through skin traumata ran a more benign course than that following natural infection. Small-pox came to Europe probably round about the sixteenth century and though variolation was held by some to have been independently discovered and secretly practised by peasants in various western countries, it was its importation from the east, largely through the efforts of Lady Mary Wortley Montagu, that brought the method into prominence in the eighteenth century. Fatal issues in the hands of capable inoculators were surprisingly small, possibly because the eastern ritual was adopted —insistence on spare diet, cooling drinks, and life in the open—for those inoculated. The recognised necessity of paying careful attention to the state of health of candidates for vaccination in modern times was indeed only a reflexion of an old-established eastern rule. The question whether any genuine lasting attenuation of the variola virus was achieved by the practice of variolation in human passage was of great interest. There seemed little doubt that certain inoculators who carefully selected their material only from primary vesicles obtained results approaching closely to those following vaccination. Secondary pocks might be either very few or absent. Were such human-passaged strains of variola available now, it would be of the greatest interest to determine how far, if at all, they might differ antigenically from the variola-vaccine derived by passage from man to other mammalian species. The problem was, in fact, whether the change from variola to the attenuated variant known as vaccinia could take place without transference to another host. Prof. Ledingham concluded his remarks on variolation by pointing out that it was an effective method of small-pox prevention, not without risk to the individual and the community, which was essentially a product of the deductive logic of independently reasoning beings in probably many isolated communities. In this country it had a long life and survived, though precariously, into Jennerian times. For all time it would occupy an outstanding place in the development of immunology as a way of forestalling a natural disease and robbing it of much of its power for harm.

The advent of Jenner and vaccination opened up an entirely new field of endeavour in which for the first time observation and experiment went hand in hand. Prof. Ledingham quoted effectively in the laboratory language of to-day the two cardinal experiments recorded in the famous *Enquiry* of 1798 on which rested Jenner's claim to immortal fame, and proceeded to discuss the nature of cow-pox—which was still abroad in the world—and what virtue it had that made it, as Jenner had experimentally demonstrated, an apparently effective prophylactic against human small-pox. This was a region of old and perhaps still smouldering controversy which could now be approached calmly, owing to the rise and gigantic development of the bacteriological era, with, of late, more than an inroad into the nature of those agents called viruses of which Jenner was the pioneer student. Jenner himself approached the problem by a study of the origin of cow-pox which he linked with a disease of horses known as the grease. Three clinical entities, the grease in the horse, the cow-pox of the cow, and the casual cow-pox in man, were, he found reason to believe, ætiologically connected and strictly in this order of passage, infected matter being conveyed on the hands of farm attendants from the lesions on the horse's heels to the teats of cows, and thence to other milkers. Jenner had to abandon his idea of the equine origin of cow-pox, but it was now quite clear how this idea arose. John Loy in 1801 showed that there were two kinds of grease, only one kind being communicable to man and cow. The grease that was communicable came from horses in which the local inflammatory condition of the heel was only part of a more general exanthem, while the non-infective grease might be any sort of banal inflammatory condition in the region of the heel. In recent years the grease had been shown definitely to be one of the local manifestations of horse-pox or contagious pustular stomatitis, and as horse-pox it took its place with cow-pox in a common problem still unsolved. Were these diseases sui generis or were they, wherever they might be found, due invariably to unwitting variolation or vaccination of the horse or cow by the hand of man? Current text-book opinion postulated for these diseases a purely extraneous origin—i.e., they were held always to be man-induced, but Prof. Ledingham had never been satisfied with the evidence supporting this view. He pointed out that the direct variolation of the cow was not easy; it had long been attempted without success, though eventually by direct or indirect means and artifices such as the use of intermediary animals like the monkey and rabbit it was achieved, a new source of vaccine lymph became available and recourse to casual cow-pox was rendered unnecessary. Prof. Ledingham spoke briefly of the efforts made by himself and his colleagues at various times in recent years to secure a vaccinia-like variant from variola of the alastrim type in this country, by rabbit passage alone or monkey passage followed by rabbit passage, and of the light shed by these efforts on adaptation problems. Doubtless the question of virus adaptation would have to be studied on the lines so profitably employed in recent years in connexion with bacterial variation. The fact that human variola could, though with difficulty, be made to yield a variant pathogenically similar to fully adapted cow-pox, and like it capable of conferring immunity to small-pox, had been one of the strong arguments in support of the view that cow-pox was not an independent clinical entity and the result had been to ignore cow-pox as a mere side issue. But cow-pox could not be ignored or forgotten, for it was still with us; in quite recent years reports had been received of cow-pox prevalence in Austria and in Holland.

According to Dr. Kaiser, of the Vienna Lymph Station, there was now as in the past great difficulty in getting information about cow-pox, since farmers feared to declare its existence lest the sale of their milk should be prejudiced. It was only when the milkers contracted troublesome vaccinal lesions on their hands and arms that attention was drawn to the underlying cause. These lesions were of interest from two points of view. Though the commoner ones were vaccinal in type, there occurred also hard chronic cherry-red nodes which would seem to have an entirely different ætiology and were possibly to be related to the peculiar paravaccinia lesions described by Pirquet in 1915 as occurring particularly in revaccinations and believed by him to be due to an entirely independent virus. The point of interest in the milker's lesions of the frankly vaccinal type was the fact of their occurrence in vaccinated persons. It was noteworthy that neither Kaiser in Austria nor Frenkel in Holland was able to assign a possible origin of any of these recent outbreaks of cow-pox in recent human vaccination. In spite of his absolutely negative findings in this respect Frenkel still expressed his adherence to the

belief that most cases of natural cow-pox are due to infection from newly vaccinated men. It would almost seem that there was a sort of conspiracy to bolster up the conventional view that cow-pox is not a disease sui generis. Personally Prof. Ledingham considered the matter entirely non-proven and so far as the epidemiological and circumstantial evidence in support of the secondary origin was concerned, it seemed to him extremely weak. That cows and horses could be variolated with difficulty or vaccinated with ease could not be used as a strong argument against the spontaneous origin of horse-pox and cow-pox if the circumstantial evidence was faulty, and it was here that he suggested tentatively a way out of the impasse. The mere fact that variola, cow-pox, and horse-pox could be made to throw off a type of variant possessing apparently similar properties—in fact, a sort of least common denominator which was designated vaccinia—in no way indicated identity of constituent antigen in the serological sense. The methods so far applied to the determination of affinities between clinically allied viruses, such as cross-protection or mutual neutralisation of response with the corresponding antiviral sera, could at the best afford evidence only of some definite community of antigen. On this basis variola, cow-pox, and horse-pox would be closely related, but Prof. Ledingham considered the experimental evidence supporting affinities between variola-vaccine on the one hand and sheep-pox and fowl-pox on the other to be far from satisfactory. He had no experience of sheep-pox, but so far as fowl-pox was concerned his own work yielded no evidence whatever of cross-protection between vaccinia and this disease of the fowl. It was possible that antiviral serum, which was largely used in work of this kind, might bring to light only broad affinities between virus antigens, whereas immune sera prepared from the pure elementary bodies of these pock diseases and used in agglutination and agglutinin-absorption techniques might yield much finer distinctions. The time was ripe for a great extension of this kind of work in elucidating affinities between viruses.

In conclusion Prof. Ledingham referred to the overwhelming advantage possessed by the comparative pathologist of the present day over the pioneers of a century ago in his armamentarium for the application of the experimental method. Supporting that armamentarium was the lore of the cell and the completely new outlook given by the development of bacteriology. These helps the pioneers had to do without, but could it be said that their work suffered very greatly in its intrinsic value on this account? Prof. Ledingham thought not. When one read, for example, the masterly clinical studies of an infectious disease by men of the standing of Robert Ceely one could not fail to be deeply impressed by their highly cultivated powers of observation, their capacity for reasoning from clinical premisses, and by the leisurely preparation of their published work in English undefiled. He sometimes felt that the very facility of the experimental method in these modern times was too often reflected in the premature publication of undigested or misinterpreted experiment. On the other hand, too often the morbid anatomist and histologist failed to realise how necessary it was for him to apply the experimental method wherever possible if his work was to interest a generation that craves for experimental demonstration. The experimental pathologist could usually be recognised from his methods of attack on problems and an outlook that came from constantly realising and satisfying the widest implications of experiment. He quoted for their encouragement some words written by Robert Ceely, surgeon to the Buckinghamshire Infirmary, in the year 1842. "The knowledge of the diseases of animals, when it becomes more advanced, will contribute to diffuse new light on the diseases of man and perhaps bring to perfection methods of cure and prevention owing to the facility of multiplying on the inferior animals experiments which we cannot attempt in man. In the department of comparative pathology comprehending the exanthemata much remains to be accomplished, notwithstanding its diligent and successful cultivation in some parts of the continent since the time of Jenner. What has hitherto been effected there cannot suffice, however, to supersede, much less to paralyse, the efforts of his countrymen. But they must arouse themselves and no longer exhibit a practical indifference to the researches to which he so successfully devoted the energies of his great mind." They could, he thought, at a century's distance from Ceely's time, truthfully and thankfully say that the edifice whose foundation was laid by Jenner was still in the hands of the decorators.

SECTION OF NEUROLOGY

Dr. F. G. GOLLA in a presidential address delivered to this section on Oct. 17th on the

Nervous System and the Organic Whole

emphasised the necessity for a much more comprehensive view of nervous activity than that afforded by physiology. He pointed out that mechanical conceptions of nervous function are applicable to macroscopic entities alone and that the micro-mechanics of pure physics cannot be used in the elucidation of organic activity. Since the reflex studied in isolation is a physiological abstraction, he argued that attempts to account for nervous activity in terms of reflex integration are fallacious; that the unit of function, if it can be differentiated, is not the reflex arc but a mechanism which is governed by the sum of the resultant stresses of the rest of the nervous system. He defined the nervous system not as a passive organism only responding to changes in the internal and external environment but as exhibiting in itself a state of autogenous activity. If it was to be regarded as a mechanism it was one that acts as a whole, whose activity is autogenous but modified by the totality of the environment, whose lability is very great but still directed as a whole towards certain modes of reaction. Dr. Golla pointed out that the nervous system considered apart from its history was an abstraction; every existing object whether at rest or motion is a strand of history with some duration. Activity whether considered in relation to the nervous system or its environment could never be recapitulated. Again, no account of the nervous system could be other than an abstraction that did not envisage its relation to mental events. Theories of the relation of mind to body were not discussed by Dr. Golla, but all arguments were, he said, based on the brute fact, verifiable by the evidence of normal and pathological psychology, that mental events are invariably accompanied by related nervous events. Since we are aware of purpose in initiating and continuing certain chains of activity he argued that some physical correlate of purposive direction must accompany the corresponding nervous function. A teleological activity was thus postulated for nervous activity

from considerations based on the holistic view of nervous function. The objections to teleological theories in science were also dealt with by Dr. Golla; as he pointed out, the views he advanced were distinguished from the old teleology in that final causes were not contemplated. The orientation of the total activity of the organism was not determined by finality. He claimed that the views advanced would, by considering nervous function in relation to the organic whole, make intelligible many forms of nervous activity which, considered by themselves, are meaningless.

SECTION OF MEDICINE

AT a meeting of this section held on Oct. 22nd the chair was taken by Sir CHARLTON BRISCOE, the president, and Dr. ARNOLD STOTT opened a discussion on the

Recognition of Myocardial Deficiency

He said that increasing attention was being paid to the myocardium in gauging the severity of heart disease and in prognosis. The ætiology of chronic heart disease should be determined at the outset of every case. The commonest cause was rheumatism (32 per cent.), closely followed by hypertension (30 per cent.) and arterio-sclerosis (25 per cent.). Rare causes were syphilis (4 per cent.) and thyrotoxicosis (3 per cent.). Rheumatic infection was practically the only cause under the age of 30, and it appeared as chronic valvular disease, especially of the mitral valve, with some enlargement and, in most cases, eventual auricular fibrillation and congestive heart failure. Syphilis usually started as aortitis spreading to the aortic valve, followed by gross enlargement of the left ventricle. Often there was obstruction of a coronary artery with angina or infarct. Rarely there was a diffuse syphilitic myocarditis or gumma producing heart block. Hypertensive heart disease was important in later life and usually of the "essential" type, though in about 5 per cent. of cases it followed chronic nephritis. There was a varying degree of enlargement, and congestive heart failure was a common ending. Arterio-sclerotic heart disease was recognised by angina pectoris or infarction from coronary thrombosis. Angina might be present without other signs of cardiac disease. Thyrotoxic heart disease was characterised by palpitation and dyspnœa, and later by auricular fibrillation terminating in congestive heart failure. The eye signs and thyroid enlargement might be very slight. Surgical treatment was often successful. Certain symptoms helped in the recognition of all these types. Dyspnœa was the most important, appearing on a degree of exertion not previously causing distress, and resulting from an insufficient output of aerated blood to the respiratory centre. It was progressive to orthopnœa, and was invariably present in those types in which congestive heart failure eventually appeared. An entirely different dyspnœa was cardiac asthma, a sure sign of severe myocardial disease; this occurred in paroxysms, usually during sleep, and was believed to be due to sudden left ventricular weakness causing engorgement of the lungs. It was common in hypertension and might be the first symptom. Cheyne-Stokes breathing was often present in the later stages of grave myocardial disease. Anginal pain was not usually agonising or associated with a "sense of dissolution," and was too often labelled indigestion. It was particularly noticeable on hurrying after a meal, and was often accompanied by aerophagy.

The most important physical sign of myocardial deficiency was enlargement, which was not only a response to increased work. The simplest clinical method of estimating it was the position of the apex-beat. Radiology was a great help in determining this, but percussion was crude and seldom of much use. Diastolic murmurs were more important than systolic and involved a strain on the heart; but the heart had enormous reserve power and the significance of valvular disease lay in the likelihood of simultaneous damage to valves and myocardium. Pulsus alternans and gallop rhythm were signs of grave damage, as were also persistent auricular fibrillation, auricular flutter, and complete heart block. Paroxysms of tachycardia were functional disturbances not necessarily resulting from myocardial damage. Signs of overfilling of the venous system should be sought in cases of dyspnœa or suspected heart disease; the tell-tale jugular veins should never be overlooked. Slight distension in he recumbent position might be a valuable early sign.

The electrocardiogram identified arrhythmias, tachycardias, and bradycardias, and gave certain signs unobtainable by other means; in some cases it brought certainty where the diagnosis would otherwise be in doubt; but it seldom gave more than confirmatory evidence of myocardial disease. The most valuable diagnostic points were dyspnœa, pain, enlargement, certain murmurs and disorders of rhythm, and the evidence of overfilling of the venous system.

THE CHIEF DIFFICULTIES IN DIAGNOSIS

Dr. D. EVAN BEDFORD said that the detection of hypertensive cardiac disease depended largely on symptoms. The common errror was not so much to overlook myocardial disease as to diagnose it when it was not there. Dyspnœa might simulate it in cases of emphysema. A barrel-shaped chest was not important in emphysema but restricted expansion of the lung was, and radioscopy was a great help. Secondary changes in the heart occurred in a few cases, but actual heart failure was very rare and almost invariably accompanied by obliterative changes in the pulmonary vessels. Pulmonary fibrosis might closely simulate the dyspnœa of heart disease, as might also cancer of the bronchus, which was a not uncommon cause of severe dyspnœa. Diffuse secondary carcinomatosis might cause fine fibrosis with pronounced dyspnœa and perhaps persistent tachycardia—apparently reflex—but few physical signs. Mediastinal tumours sometimes caused difficulty as in the early stages they might only be recognisable by X rays. Intrathoracic goitre was an important cause of dyspnœa, tachycardia, and heart failure. A rare cause was obliterative pulmonary endarteritis. Nervous dyspnœa was often attributed to the heart; it was associated with a peculiar sensation of air-hunger and sighing respiration. Abdominal obesity was a common cause of severe dyspnœa, as it elevated the diaphragm. Full radiological and other investigations were necessary for the diagnosis of myocardial disease. Left mammary pain was often put down to heart disease. It was a dull ache radiating to the angle of the left scapula or down the left arm. Radiation down the right arm was rare in this nervous type and was therefore of greater diagnostic aid in angina than radiation down the left arm. Pain in the breast

should never suggest heart disease. Aneurysm, substernal goitre, and mediastinal tumour might cause pain but were revealed by radiographic examination. Para-œsophageal hernia was a rare cause of angina-like pain. Syncope was not a common symptom in myocardial disease. Faints beginning in middle life suggested cerebral rather than cardiac disease. Vaso-vagal attacks might be alarming and cause diagnostic difficulties, but the history and perfect recovery between attacks were diagnostic. Tachycardia alone was not a reliable evidence of myocardial disease; nor were extrasystoles. Ventricular paroxysmal tachycardia was of more serious omen than other types. Auricular fibrillation or flutter usually indicated myocardial disease, but œdema was only evidence if associated with other signs such as filling of the cervical veins. Exhaustion and giddiness should not suggest heart disease. Systolic murmurs and alterations in the first sound were of little help. Myocardial disease should never be diagnosed on heart sounds alone, with the possible exception of gallop rhythm.

Systematic investigation must be made to discover the cause in every case. A routine Wassermann was of advantage, especially if there was cardiac pain, and X rays of the aorta were useful. The condition of the aorta was a very good indication of the condition of the coronary arteries. Coronary disease was recognised largely by exclusion; almost all patients had had pain or dyspnœa before mortal syncope occurred. The electrocardiogram was of great value in confirming the diagnosis. Chronic constrictive pericarditis was a rare cause of heart disease.

FATTY INFILTRATION

Dr. A. G. GIBSON said that fatty infiltration was a factor which might be found in minor degrees at all ages and not only in the obese. The wall might be almost wholly replaced by fat, and fat might be found under the endocardium in severe cases. Muscle bundles were pushed away. These cases did not generally come to the cardiologist or physician. In 300 routine post-mortem examinations there had been 116 (38 per cent.) cases of fatty infiltration. In life the patients had shown irrelevant disorders (gastric, cerebral, and renal) in 42 per cent. Death had been sudden and unexpected in 13·7 per cent.; reduced to 10·3 per cent. if four cases of ischæmic necrosis were excluded. There had been five anæsthetic deaths, and other cases of sudden unexpected death, some before and others after operation (15·7 per cent. followed operation). In a group of cases (18·9 per cent.) fatty infiltration had been associated with accident, and in 8·6 per cent. there had been heart disease as well. One patient who had died suddenly had been attended regularly for "myocarditis," but there had been no post-mortem cardiac lesion other than fatty infiltration. This condition added a factor of stress when there was a heart strain such as operation or accident, and might cause signs of heart failure.

DISCUSSION

Dr. B. T. PARSONS-SMITH thought that the back-pressure theory of heart failure was rather discredited nowadays in favour of the diminished output theory. Recent work had shown that the failing heart had only a very slightly diminished output, and the back-pressure theory was worthy of consideration. Congestion of the lungs might play some part in dyspnœa. Reflex impulses from lungs, heart, and muscles might also be important. The blood in early heart failure showed no deficiency of oxygen and no increased acidity or carbon dioxide content.

Dr. LOEWY (Vienna) said that if a sample of blood were taken from a dyspnœic patient and compared with the normal it would always show a much darker colour if emphysema were present. This was a useful test for the exclusion of emphysema as a cause of dyspnœa.

Dr. K. HARRIS thought the risk of diagnosing angina in cases of indigestion was greater than the converse. He inquired the importance of the T wave in myocardial degeneration.

The PRESIDENT said that two symptoms were of importance: unexpected fainting in an elderly patient, and sallowness. A number of organs had a direct inhibitory effect on the tone and level of the diaphragm and caused excessive movement of the chest of which the patient was very conscious. The stomach had this effect, as had also the heart and the gall-bladder. A contrary effect was produced by distension of the colon, which lowered the diaphragm. There was an alteration in the outline of the chest and upon this depended the pains found in these conditions.

Dr. SHIRLEY SMITH mentioned the significance of a new appearance in late life of any symptoms which might suggest the cardiovascular system. Anginal pain often had a relationship to food, but nervous left-mammary pain had not.

Dr. H. S. STANNUS spoke of the frequency of certificates of "cardiac debility" and wondered if these cases were all anxiety neurosis, and mentioned the frequency of heart symptoms in gall-bladder disease.

Dr. STOTT, in reply, said he was quite unfamiliar with the appearance of fatty infiltration in cases of sudden death. He did not regard a diminished output of oxygenated blood as the sole cause of dyspnœa, which was not a simple question. The sallowness mentioned by the President was especially associated with coronary disease and was very difficult to explain.

Dr. BEDFORD, also in reply, thought it was unscientific to base prognosis on inversion of the T wave or any other single finding. Only experience could teach when to rely largely on the electrocardiogram, which should in any case be regarded as a diagnostic rather than a prognostic instrument. Faints first appearing in middle or later life were serious, but for the brain rather than the heart, he thought. Influenza did not lead to cardiac disease but rather to disturbances of the autonomic nervous system.

Dr. GIBSON, replying to Dr. Stannus, commented that surgeons regarded gall-bladder cases as especially liable to heart complications, and fatty infiltration was often found in gall-stone cases.

NEW SUN RAY CLINIC AT BEDLINGTON.—Mr. Godfrey Nicholson, M.P., on Oct. 12th declared open a new sun ray clinic and child welfare and maternity centre at Bedlington, Northumberland. The centre is a fine single-story building, and in the sun ray department equipment of the latest type is installed.

ROYAL HAMPSHIRE COUNTY HOSPITAL.—This institution has launched an appeal for £30,000 to commemorate the bicentenary of its establishment. Said to be the first hospital to be supported by voluntary contributions set up outside London, it was founded in 1736. In 1865 larger accommodation was required and the present site of the institution was selected by Florence Nightingale who personally supervised the planning.

REVIEWS AND NOTICES OF BOOKS

Injury and Incapacity

With special reference to Industrial Insurance. By H. ERNEST GRIFFITHS, M.S. Lond., F.R.C.S., Surgeon, Albert Dock Hospital. London: Baillière, Tindall and Cox. 1935. Pp. 270. 12*s.* 6*d.*

IN the preface to this useful work Mr. Griffiths comments on the remarkable differences of opinion expressed in the law courts by medical witnesses asked to give a prognosis in cases of injury. It is of interest that the hospital surgeon generally gives a much more favourable prognosis than the patient's panel doctor. This does not necessarily represent any real divergence of view, but only means that the surgeon bases his prognosis on the length of time before the patient will be discharged from hospital, while the panel doctor estimates the period during which he will have to give certificates that the patient is still unfit for work. In order to arrive at a basis of prognosis for each disability discussed in this book Mr. Griffiths deemed it necessary to trace the history of a large number of cases from the date of injury to the time of resumption of full work. He was reluctant to use hospital figures on the grounds that the records of any one hospital must depend on the type of work in the neighbourhood, and also upon the skill of individual surgeons. It was therefore decided to obtain the figures through an insurance company, and by the courtesy of one of the largest companies in this country, which deals mainly with claims arising out of the Workmen's Compensation Acts, facilities were provided for analysis of 50,000 consecutive cases of accidents. After the first 10,000 of these had been analysed it was found that a sufficient number of certain injuries had been obtained, but where there was any doubt the whole series was investigated. For example, no cases of cut finger were examined after the first 10,000, but every fracture occurring in the whole group was tabulated. In addition to this analysis Mr. Griffiths has been able to utilise his own large experience in the treatment of injured workmen and in the determination of their working capacity. From a study of these records he has drawn up tables of average periods of incapacity for both heavy and light work consequent upon various injuries.

The main part of the book is divided into twelve chapters dealing in turn with disabilities resulting from injuries to the head, chest, back, abdomen; from fractures of the upper and the lower limb; from injuries to nerves and muscles; and from dislocation and diseases of the joints of the upper and the lower limb. The last two chapters concern amputations and miscellaneous injuries. The second part of the book is perhaps even more valuable. Here are described the maximum degrees of disability compatible with efficient work in twenty-four skilled and unskilled occupations. It is interesting to learn, for example, that shortening of the forearm or an inability to rotate it more than 15° in either direction constitutes no disability in a navvy, and that a lorry driver may still be looked upon as fully effective despite flat-foot or a left-footed Syme's amputation. An index of occupations follows which indicates the type to which each class of work belongs, and is the more useful because it contains many crafts which will be unfamiliar to most doctors—for instance, on the first page alone, aerographers, back-tenters, backwash minders, greasy birlers, and Berlin blackers.

The index is occasionally inaccurate and in the chapter on spinal injuries no mention is made of spondylolisthesis, although trauma must frequently be a factor in producing this condition. Otherwise the book defies criticism. It is simply and lucidly written, and should be as comprehensible to the intelligent layman as to the doctor. Everyone who has to deal with that distressingly prevalent malady "compensitis" should have this book at hand for reference.

Textbook of General Bacteriology

Eleventh edition. By EDWIN O. JORDAN, Ph.D., Professor of Bacteriology in the University of Chicago and in Rush Medical College. London and Philadelphia: W. B. Saunders Co., Ltd. 1935. Pp. 825. 25*s.*

THIS book has found a niche of its own among the better text-books on bacteriology. It contains an adequate but not too detailed account of medical and public health bacteriology written from a broader point of view than are most medical text-books on the subject; thus there are excellent chapters on the nitrogen cycle in nature, on bacteria in the industries, and on bacteria in connexion with plant diseases. These chapters are very useful, since they arouse in the medical student an interest in the more general problems of microbiology. The broad outlook of the work also makes it one of the best of introductions to medical bacteriology for students of agriculture and kindred subjects who have already approached bacteriology from their own point of view. The new edition has been brought well up to date; among the revised chapters that on food poisoning is particularly good.

A Complete Physics

Written for London medical students and general use. By W. H. WHITE, M.A., B.Sc., Senior of the Lecturers and Examiners in Physics in the Medical Schools of London. London: Richard Clay and Sons, Ltd. 1935. Pp. 848. 15*s.*

THIS is indeed a remarkably complete text-book on physics for medical students. It covers 848 pages, contains 420 diagrams, and is interspersed with 1000 examination questions. A study of the index will convince the reader that no part of physics is neglected. But the author puts a question just before the list of contents: "Behold, there were very many . . . and lo, they were very dry. Can these bones live?" They can indeed and they do. Besides being comprehensive this is a lively book, full of sound information leavened by good fun and even wit.

Apart from the general excellence of the text the book has another source of attraction—the affectionate regard manifested by the author for the struggling student. This is exemplified in the three-page valedictory on the subject of examinations:—

"Some of you can't help being nervous; so far as we are concerned there is no cause for it, what we cannot allay we try to allow for: the awful divinity that doth hedge a visiting school examiner we have outgrown: we be your elder brethren, glad enough to welcome youngsters into the family, only putting back those who, as yet, have over-estimated the natural gifts of their youth . . . "

The text ends with a Frater Vale, and a photograph exhibiting the bright humour of an author who is certainly serving youth well by this book.

THE LANCET

LONDON: SATURDAY, OCTOBER 26, 1935

THE PREVENTIVE OUTLOOK

Dr. W. G. SAVAGE in his presidential address last week to the Society of Medical Officers of Health criticised some present tendencies in the public health service. It was more than thirty years ago that he joined that service because he believed in preventive medicine, and he was, he said, still the true believer from whom criticism comes best. The work of the M.O.H. was less interesting and less stimulating than it was before the war, and it was likely to become even less so. In the larger areas the medical officer of health would soon be forced to be almost entirely an administrator, a master of experts in all subjects but expert in nothing himself. This tendency had been accentuated by the Local Government Act of 1929, by which the medical officer of health became an administrator of beds, largely occupied by the end-products of disease, and a supervisor of defectives—in a word, "largely enmeshed in functions which are not our proper business." He would not go so far as the late Dr. F. E. WYNNE did in 1922 when he wrote of "the wrong turning" in public health, but they were being induced and officially directed to squander energies by incursions into side roads, progress to the real goal being deplorably slow. It may be interpolated here that the Ministry of Health is party to a wide liberty in the way the annual reports of medical officers of health are drawn up. In a circular just issued, while it is stated in general terms that the report for 1935 should be limited to a record of alterations, improvements, or developments which have taken place during the year, specific request is made for an account of any noteworthy conditions prejudicial to the health of the area which have not been adequately dealt with in previous special reports, and it is open to the medical officer to discuss in any report a special subject of importance to the health of his area.

The law as it affects public health is at the moment in a state of flux, for, as indicated on another page, the codification of enactments under which the medical officer of health does his work has been completed and there is no reason why a new Act should not soon be placed on the statute book which will facilitate reference and help to lubricate progress. One of the chief difficulties in putting preventive medicine into practice is the inflexibility of the law. It was, Dr. SAVAGE said, often made a ground of reproach that the findings of science were not more quickly applicable to public health practice, that the lag period between ascertainment and enforcement was too long. He himself holds the opposite view, believing that as laws are now made the tendency is to apply findings before it is known that they are really applicable. Of this he gave a striking example: vast sums had been spent on isolation hospitals which would never have been spent in that form if our present knowledge had been available. But the law is the law, and a vested interest springs up around it with a strong bias to perpetuate what exists. While hypotheses are the breath of life to science, no scientist would go to the stake for a hypothesis; and while welcoming the practice of making innovations in public health permissible and adoptive, Dr. SAVAGE would only have this done where the findings can be studied and tested in a spirit of research. Adequate scientific controls, that was the urgent need in public health work to-day, and that, he said, means an adequate staff. Long overdue is the detailed study of morbidity; we require statistics of diseases as much as we need statistics of mortality. Dr. SAVAGE looks for a wide extension of compulsory notification in selected areas under controlled conditions, so that we can learn something about their distribution, age onset, incidence upon various sections of the community, and relation to other morbid factors. What do we know of disease that only death-rates know?

More time to think and more knowledge to oil our thinking brought Dr. SAVAGE to the question of skilled lay assistance to preclude the medical officer of health from wasting his time on problems for which he was never trained. Lay administration had its own dangers, the chief being inelasticity. But if to his other training the medical officer of health added a training in scientific administration he should be able to shed much of his present burden of pure administration and turn to more significant matters. There was dissatisfaction too among the younger men who had entered the service hopefully but had found their actual duties bore little relationship to the larger problems of public health. So many routine examinations, so many processions of children for whom they could only give advice and not treatment. Every service required constant revision; with adequately trained infant visitors most of the work now done at the centres could be done in the homes, while much of the school inspection and maternal welfare should be transferred to the private practitioner. This would serve to shorten the long disheartening road from the D.P.H. to the M.O.H. Developments along these lines should increase the interest of the work of the junior members of the service and help to preserve that freshness of outlook which would counteract the tendency of the senior members to sink into ruts. The thread running through Dr. SAVAGE'S whole discourse was insistence upon the fluid and dynamic nature of the health officer's work and its preventive outlook.

TUBERCULOUS MENINGITIS

SEVERAL of the more obvious problems of tuberculosis of the nervous system remain unsolved. Conspicuous among them is the relation of tuberculous meningitis—the predominant clinical manifestation—to miliary tubercle and to the focal deposits which attract less attention during life but are more easily demonstrable post mortem. Two years ago we reviewed this subject [1] with particular reference to the work of V. P. JOUKOVSKY and V. N. ROUSSKIKH, and the varied types of focal lesion they demonstrated in the nervous system. Since then there have been many further contributions and some of the writers have exposed new aspects of old problems. It is noticeable that of late investigation has been directed as much to adults as to children; and in at least two directions some advance seems to have been made—on the pathogenesis of tuberculous meningitis and on the possibility of recovery from it. But inquiry along these lines has brought into prominence a difficulty which has been insufficiently appreciated—the difficulty of making a certain diagnosis during life.

During the present year studies on cerebral tuberculosis in children have been reported by BLACKLOCK and GRIFFIN [2] in this country and by MORRIS SIEGEL [3] in the United States. The former tabulate the post-mortem findings in 241 children, and it is particularly interesting to read the account of 45 cases in which tubercle bacilli were isolated from the cerebro-spinal fluid during the illness. In all but one of these meningitis was found; in eight it was associated with tuberculomata. But the single case in which general miliary tubercle and tuberculomata were unaccompanied by meningitis is of no little significance, for the signs and symptoms had led to a diagnosis of meningitis, and the fluid had been lethal to the guinea-pig. As BLACKLOCK and GRIFFIN suggest, some reported cases of recovery may well have been of this kind. In reviewing the subject of pathogenesis SIEGEL endeavours to correlate the results of animal experiment with those of clinical and pathological observation. The consistent failure of attempts to produce meningitis in animals by any means other than subarachnoid inoculation suggests that bacillæmia is not the immediate cause of meningitis—a conclusion in accordance with the findings in very young infants (1–2 months). In early infancy general miliary tuberculosis is found, but never meningitis, and seldom macroscopic tubercles; the child dies of toxæmia before cerebral foci have had time to develop. At a slightly later age a few isolated tubercles may be found in the brain and meninges, and meningitis may also occur. The delay in the appearance of meningitis is attributed to "the difficulty of getting enough free bacilli into the intermeningeal spaces." It seems probable that infection of the blood stream produces at first only isolated tubercles, as asserted by RICH and MCCORDOCK. On the other hand meningitis may undoubtedly arise by extension from isolated foci in the absence of general miliary tuberculosis. In a detailed account of their researches in France BOQUET and BROCA [4] confirm some of these observations. They found that meningitis was easily produced in rabbits by subarachnoid inoculation not only with active tubercle bacilli, but with B C G or killed bacilli. After intravenous injection organisms could be obtained from the brain, but meningitis never developed.

Also in France, ROGER [5] draws attention to certain characteristics of tuberculous meningitis in adults in whom, he says, the convulsive element is absent and the morbid process more localised but less typically basal. In a careful description of the symptomatology in adults he lays special emphasis on the subacute course and on the frequency of psychic disturbances which may complicate the diagnosis. He is convinced that treatment by Jousset's "allergine" has achieved success and is worthy of trial. ALLAN WALKER, [6] of Sydney, brings out the fact that in adults meningitis is by no means always a manifestation of general miliary tuberculosis. Tubercles are always to be found, but are not a prominent feature of the pathology. Most characteristic are the highly gelatinous exudate and "a tendency to necrotic change of slight but definite degree, a tissue spoiling which is probably not wholly dependent upon vascular change." WALKER draws an interesting analogy between these processes and "epituberculous" pulmonary affections. He suggests that the course of the disease is divisible into three stages: first, blood insemination with tubercle-formation; secondly, sub-pial infection; and lastly, massive meningeal infection with formation of exudate and local softening. Such cases as recover have probably not reached the third of these stages.

The question of recovery from tuberculous meningitis is intimately related to that of pathogenesis: HOBSON [7] in our own columns recently described the case of a man of 24 who had signs suggestive of tuberculoma of the posterior fossa; in addition there were neck rigidity, fever, and vomiting, and tubercle bacilli were found on three occasions in the cerebro-spinal fluid; yet within four months he had made a complete recovery, and he was in good health five months after discharge. HOBSON suggests that a pure tuberculous meningitis had been present, but was localised to the posterior fossa. Like the work already mentioned his case record shows the difficulty of interpreting apparent recovery from tuberculous meningitis. What exactly has the patient recovered from? Are there any means of deciding conclusively during life that a person is suffering from true tuberculous meningitis? Clinical observation cannot establish the diagnosis;

[1] THE LANCET, 1933, ii., 192.
[2] Blacklock, J. W. S., and Griffin, Mary: Jour. Path. and Bact., May, 1935, p. 489.
[3] Siegel, M.: Amer. Jour. Tuberc., August, 1935, p. 196.
[4] Boquet, A., and Broca, R.: Ann. de l'Inst. Pasteur, July, 1935, p. 8.
[5] Roger, H.: Paris méd., 1934, ii., 177.
[6] Walker, A. S.: Med. Jour. Australia, 1935, i., 40.
[7] Hobson, F. G.: THE LANCET, 1935, i., 933.

it can only detect the signs of meningeal irritation. The physician relies for confirmation on certain changes in the cerebro-spinal fluid, and it may be that the interpretation of these changes needs reconsideration. In BLACKLOCK and GRIFFIN'S case to which we have referred the fluid showed "a low count of cells, chiefly lymphocytes, and a positive Pandy reaction," and was lethal to the guinea-pig; unfortunately no mention is made of the chlorides. It came to autopsy, but no meningitis was present. In HOBSON'S case the diagnosis of meningitis was undoubtedly justified according to the customary criteria. In the fluid both polymorph and lymphocytic cells were present, though the count is not given; the chlorides fell on one occasion to 550. We are left with the salient fact that of cases in which the cerebro-spinal fluid shows changes like these an overwhelming majority are rapidly fatal. It remains to be discovered what circumstances account for the few fortunate exceptions.

THE ASSESSMENT OF NUTRITION

THE decision of the Health Organisation of the League of Nations to continue and develop its investigation of nutritional problems renders it doubly urgent to define what malnutrition is. Our own Board of Education, as is noted in another section of this issue (p. 968), relies on the impression of the school doctors, which leaves room for wide divergence of opinion. No index of nutrition has met with general acceptance. In most indices—and their name is now legion—weight has been one of the factors employed, while many other measurements—height, body circumference, thickness of the abdominal fold—have been used in the search for a constant to indicate the same state of nutrition at different ages and heights. The simple index, height divided by weight, has been replaced by the weight divided by the square or the cube of the height, and in fact all varieties of multiples, divisions, and additions have been propounded. These more sophisticated constants, however, appear to have very little in their favour, since it has been shown that the simple ratio, W/H, is just as highly correlated with the assessments of nutritional status by experienced clinicians as are the more elaborate ratios, W/H^2 for example, at least at ages under 5.[1] On the other hand it can be argued that any index comprising weight as the main factor is unsatisfactory. Heavy children may derive their weight from a large frame which is, in fact, inadequately covered, while light-weight children may be well-nourished and owe their low position on the scale to a smaller frame. In an attempt to avoid such difficulties RAYMOND FRANZEN and GEORGE T. PALMER, working for the American Child Health Association, introduced last year a new index of nutritional status for children of 7 to 12 years of age, which, from its components, they named the ACH index.[2] This index is based on three simple measurements—namely, arm girth, chest depth, and hip width—its object being to measure soft tissues in relation to body-build. The authors claim that it selects three-fifths of extreme defect cases compared with only one-fifth by the weight-height-age method used in a comparable manner. A recent test of its efficacy is reported by C. LOUIS LEIPOLDT[3] who has applied it to 600 white and 400 native and coloured schoolboys in South Africa. The application itself is simple. Two arm measurements are taken round the upper arm, one with the arm flexed and the tips of the fingers resting on the shoulder, the second with the arm hanging loosely at the side. The chest measurements are taken antero-posteriorly with the child breathing normally; inspiration and expiration excursions are measured, and their sum is the chest-depth measure. The hip measurement is taken between the great trochanters. To apply the index the chest-depth measure is subtracted from the sum of the two arm measurements, and the difference is related to the width of the hips. FRANZEN and PALMER provide a table in which is given, for different widths of hips, the minimum difference allowable for good nutrition between the arm girth and chest-depth measurements. If the difference observed in an individual is less than the figure given in the table against the appropriate width of hips, then that child is selected as malnourished. LEIPOLDT reports favourably upon this method. His groups were first assessed by clinical methods and the proportion undernourished was found to be very high—39·8 per cent. of 500 white boys, 55·7 per cent. of 300 coloured boys. On applying the ACH index 32·8 per cent. of the white boys and 62·0 per cent. of the coloured were selected as undernourished. The test was also applied to boys attending a clinic, of whom nearly everyone was clinically assessed as malnourished—viz., 91·4 per cent. of the white, 92·7 per cent. of the coloured. The ACH index gave 78 and 94·5 per cent. for these groups. Though evidently this method may overlook many cases of malnutrition, yet it seems to have merits as a simple selection test which can readily be applied by any lay examiner. More information than is given here, however, is desirable. For instance, it has to be presumed that the 32·8 per cent. of white boys selected by the ACH test all belonged to the 39·8 per cent. clinically assessed as undernourished. It would also be interesting to learn what type of malnourished boy the test failed to select—i.e., does the missing 7 per cent. comprise only those on the borderline by clinical assessment or include some of the grossly undernourished? The fact that an index based upon American boys is apparently applicable to those of South African certainly suggests that its inventors have hit on a fundamental standard.

A further test of the method is being carried out in South Africa by I. FREED whose preliminary work at Velddrift, C.P., has led him to express considerable dissatisfaction with the height-weight-age method of assessing nutrition.[4] The 300

[1] Med. Res. Coun., Spec. Rep. Ser. No. 101.
[2] The ACH Index of Nutritional Status, Amer. Child Health Assoc., New York, 1934.
[3] South Africa Med. Jour., July 13th, 1935, p. 471.
[4] Ibid., p. 467.

children whom he examined had, according to the results of a questionnaire, a "monotonous and deficient diet," rich in carbohydrate and protein but short of fat and vitamins. Their home conditions also left much to be desired, for on the average there were 3·83 persons per bedroom, 2·04 persons per bed, and only 17·7 per cent. of the children slept alone. In average weight at each age these children are distinctly below the American and English figures FREED takes for comparison, but they do not differ appreciably from the figures for children at the Transvaal Memorial Hospital who would presumably from the genetic standpoint form a more satisfactory standard of comparison, though a hospital population can hardly be regarded as normal. Viewing these children with a clinical eye FREED says they have slender, wiry frames and are strong though lean. Their heights and weights give, he concludes, little indication of their nutritional status. It will be interesting to see how the ACH index classifies them.

NEW OPPORTUNITIES FOR RESEARCH ON THE NERVOUS SYSTEM

MEDICAL research in England owes much to American support. Of late years we have drawn help from the United States not only in money but in inspiration, and nowhere has this inspiration been more valuable than in neurology and psychiatry. It is with great pleasure therefore that we record two further gifts by the Rockefeller Foundation which will substantially improve facilities for work on these subjects in London.

The first, and larger, is made to the hospital of HUGHLINGS JACKSON, the master of neurology, whose birth centenary we have been celebrating this year. JACKSON based his philosophical studies on observations made at the National Hospital, Queen-square, and here there has developed a nucleus of workers whose names are rightly renowned. From this hospital, originally occupying only a single house in Queen-square, knowledge of the intricacies and the disorders of the nervous system has spread throughout the world; it is recognised as one of the great schools of neurology where post-graduates seek instruction and where research, despite all obstacles, is continually pursued. The obstacles, none the less, are considerable; the buildings have long been inadequate for carrying on the teaching and investigation. A scheme has accordingly been drawn up for new ones which will include sufficient teaching rooms and laboratories, with special wards and a new surgical department, and towards the expenses of their construction the Rockefeller Foundation has generously offered £60,000, provided that the hospital authorities can collect the rest. This means that £120,000 will have to be raised by public subscription in this country, and an appeal is issued this week. Given the new facilities, the Queen-square workers will be able to continue their important studies, notably on the histopathology of the nervous system in its relation with clinical problems, and the opportunities for biochemical investigation will be greatly enhanced. In view of the necessity of approximating laboratories to wards, the plans include accommodation for 27 beds, in several wards, where special observation of patients may be undertaken. Linked to these wards are physiological laboratories in which the most advanced methods for physiological investigation will be available, and simultaneously the surgical department is to be rebuilt on a scale appropriate to the technique of modern neurosurgery. To obviate the risk that the laboratories once erected should not be used through lack of means the Rockefeller Foundation has offered an additional gift of £60,000 towards an endowment fund for research, this money to be available for the remuneration of workers within the laboratories. This grant is contingent upon the hospital board raising the funds required to complete the buildings before December, 1937, but there can be little doubt that the sums required will be raised as soon as the public really becomes aware of the implications of the appeal.

If the debt of neurology to the United States is great that of psychological medicine is in many ways even greater, and fruits of the scientific liaison with America are well seen at the Maudsley Hospital which also benefits by a new Rockefeller gift. Eight of the doctors who have been on the staff of this hospital have enjoyed the advantages of a travelling fellowship of the Rockefeller Foundation, and four others have had corresponding opportunities for study abroad made available to them by the Commonwealth Fund of America. It is not only in the furtherance of child psychiatry and social psychiatry in this country that the Commonwealth Fund has played a notable part, but also in its generous support of investigations in adult psychiatry; it has maintained at the Maudsley Hospital during the last four years no less than seven full-time research workers for periods of at least a year. Besides these grants, the hospital has had the Maudsley bequest, devoted to like purposes, and the assistance of the Medical Research Council. By such means the conditions were in part provided without which fruitful research is very difficult of accomplishment; the *Archives of Neurology and Psychiatry*, issuing from this psychiatric centre, has borne testimony to the many investigations which have been the outcome. They are the outcome also of the far-sighted generosity of the London County Council in fostering progress at the hospital: without its support such development would have been impossible. The considerable enlargement of the premises, now approaching completion, is further evidence of the determination with which this body continues to provide liberal facilities for research and teaching, as well as for the indispensable day-to-day work of treating the sick. Hence many of those who work in the hospital are not only in daily contact with the clinical problems of psychiatry but must as teachers review what is known or accepted in this branch of medicine, and as investigators seek to add to the common store. Those of them who have enjoyed a Rockefeller fellowship are indeed under a moral obliga-

tion to be so engaged, and the Foundation's addition of five research posts—four of them to be allocated to men who have held important appointments in Germany—is encouraging and welcome.

The field of mental and nervous illness is so wide and difficult that no benefaction can ensure the solution of its greater problems, no hospital regard itself as more than a unit of neurological research. It is nevertheless true that without adequate financial support much of the necessary work could hardly be carried out, and that it is only at clinics which are fully staffed and equipped and also have access to a vast population, that the combination of trained investigators and suitable material for research is likely to be available. Much may be hoped from the work going on so actively at Queen-square and at the Maudsley, where circumstances have conspired to bring together men with experience in more than one country and familiarity with more than one branch of the subjects under study.

ANNOTATIONS

PSYCHOGENIC AMNESIA

POLICEMEN and casualty officers are not unacquainted and acquire some degree of familiarity with the forlorn creature, often dilapidated and travel-worn, who cannot recall his name and address or identify himself in any way. He shows no signs of recent concussion or convulsion, he seems in his senses, if somewhat bewildered, and his assertions bear the impression of genuineness. He may recover his memory before a psychiatrist has come on the scene, and he is usually reluctant to enter on a course of psychological treatment, if that be proposed. Often he turns out to have been in Queer street when his memory failed him so completely and, it may be said, opportunely. Sixty-three of these cases of psychogenic amnesia have been collected from the records of Bellevue Hospital in New York by Dr. Milton Abeles and Dr. Paul Schilder.[1] The sexes were equally represented if one ignores the homosexuality of four of the patients. The majority were adults who had not reached middle age, and the precipitating factor for the amnesia was almost always discovered to be some unpleasant social conflict, financial or familial. The attacks varied in duration, but few lasted more than a week. Recovery was spontaneous or was in some cases hastened by hypnosis, persuasion, free association, and other psychiatric devices. The authors, who indulge in the inevitable speculations about the œdipus complex, unfortunately do not discuss in detail the relation in time between the clearing up of the symptom and the ending of the situation that provoked it. It is often impossible to make any impression, by psychological or other treatment, upon the amnesia until external factors have ceased to make it profitable. This happens irrespective of whether the forgetting appears a deliberate effort to deceive, or is as obscure to the patient as any other typically hysterical mechanism might be. It is not only in hysteria, however, that fugues of this sort occur. The authors rightly point out that diagnosis must be made between psychogenic amnesia and a variety of conditions, including schizophrenia, manic-depressive psychosis, organic disease of the brain (including trauma to the head, epilepsy, cerebral arterio-sclerosis, carbon monoxide encephalopathy), and finally simulation; it is, however, possible to discover every feature of the psychogenic variety in patients whom one discovers to have an organic disease or a profound depressive syndrome. Although psychogenic amnesia, as it is commonly met with, may be taken, for therapeutic and didactic purposes, as a simple example of escape or "flight into neurosis," these latter instances serve to indicate the incompleteness of purely psychological explanations of amnesia, and the occasional practical risks of accepting them as final.

[1] Arch. Neurol. and Psychiat., September, 1935, p. 587.

WHERE IS SERUM PHOSPHATASE FORMED?

THE determination of serum (or plasma) phosphatase is assuming considerable importance as an aid in the diagnosis and treatment of certain bone diseases [1]—such as Paget's disease, generalised osteitis fibrosa, osteomalacia, and rickets—and in the distinction between different types of jaundice.[2] This has brought to the forefront the question whether the serum phosphatase in the normal individual is derived almost exclusively from the bones, or whether all the organs containing this enzyme in relatively large amount (kidney, intestinal mucosa, liver) contribute a share. Though there is little doubt that the large increase of serum phosphatase in bone disease must be of osseous origin, and that the increase found in obstructive jaundice must arise in the liver, there has hitherto been little satisfactory evidence with regard to the origin of phosphatase of *normal* serum.

Armstrong and Banting [3] have lately made an interesting attempt to add to our knowledge by experiments in which they removed various organs of adult dogs—e.g., the small intestine, the large intestine, the kidney, the liver, or the whole of the abdominal viscera—and noted the accompanying changes in the serum phosphatase level. In no case was there a fall in this enzyme in the serum after the operations, and the investigators believe that their observations support the view that bone is normally the sole source of the serum phosphatase. It is to be remarked, however, that in the normal individual the amount of this enzyme in the serum is much smaller (probably much less than one-hundredth part) than that, say, in an equal weight of kidney tissue or intestinal mucosa, or even of pancreas or lung; and Armstrong and Banting's experimental findings do not entirely preclude the possibility that the serum phosphatase represents the sum of continual leakages, from every phosphatase-synthesising organ of the body, of some tiny fraction of its store of the enzyme. If this is so, it would be expected that after removal of the organs mentioned, increased leakage from the phosphatase-synthesising cells of the remaining organs, now abnormal in their function, might easily mask any fall which would otherwise occur in the serum enzyme. In fact, in some of the recorded experi-

[1] H. D. Kay, Donald Hunter, and many others since 1929.
[2] Roberts, W. M.: Brit. Med. Jour., 1933, i., 734; Armstrong, A. R., King, E. J., and Harris, R. L.: Canad. Med. Assoc. Jour., 1934, xxxi., 14; Herbert, F. K.: Brit. Jour. Exp. Path., 1935, xvi., 365.
[3] Armstrong, A. R., and Banting, Sir F.: Canad. Med. Assoc. Jour., 1935, xxxiii., 243.

ments, as might be anticipated on this hypothesis, a fairly large post-operative *rise* was observed in the serum phosphatase, a rise which was sometimes persistent to the end of the experiment. If Armstrong and Banting's views of the origin of serum phosphatase are correct, the logical corollary would be to ascribe this increase entirely to increased osseous disturbance. But is this really the case? And is the available evidence really sufficient to allow us to limit the origin of the serum enzyme in a normal animal to any one organ or tissue?

AMBULANCE AEROPLANES IN NORTH AFRICA

THE French ambulance air service in North Africa has lately been described by Colonel M. J. A. Schickelé.[1] In 1934 the number of patients evacuated was only 227, compared with 576 in 1933, but there was not a single accident. The Army still supplies most of the patients, but there is an increasing proportion of civilian surgical cases requiring transport by air, and the ambulance aeroplane proves increasingly popular for medical cases. Last year the average length of an evacuation flight was 285 kilometres, and flights of 1000 kilometres and more were by no means exceptional. The question of cost is engaging the attention of the authorities, who hope to effect an appreciable reduction in the charges to civilians by the exploitation of civilian aeroplanes fitted so as to take patients in an emergency. The civil population of North Africa looks to the air ambulance service more and more for help in time of need.

THE CENSUS

WITH the issue early this year of the General Tables, comprising statistics of population, institutions, ages and marital conditions, birthplace and nationality, and of the Welsh language, the normal series of publications presenting statistics derived from the 1931 Census may be regarded as complete. As originally planned and announced two types of volumes have been issued—namely, those affording for each separate county (or in a few cases a group of small counties) the statistics relating to subjects which possess distinct local interest, and those presenting for the country as a whole the statistics relating to a single subject—e.g., occupations or industries. These volumes record the different aspects of the population of 1931 in the administrative areas as constituted at that date. As a result, however, of county reviews and rearrangements under the Local Government Act of 1929 a very large number of boundary alterations have been, and are continuing to be, made. With the completion of each county reorganisation, therefore, the more important census statistics in respect of the revised areal divisions are being issued in a special supplementary series of publications—County Volumes, Part II.—a procedure especially desirable in view of the decision not to take a census next year. The population given for these newly constituted areas is, of course, that present in them on the night of April 26th, 1931, but this at least affords some basis for estimations of the present population and the double classifications give continuity with the past and future. The magnitude of the changes involved in a large county is shown in the volume just issued, that for Lancashire.[2] The administrative county as a whole has obtained a net increase of 1378 acres and 70 population in marginal boundary adjustments with Cheshire and Cumberland, but has lost a net amount of 14,137 acres and 15,304 population to nine of its county boroughs. Four urban districts have been abolished and no fewer than forty-four have undergone alteration. Four rural districts have likewise been abolished and eleven others have undergone alteration. As at present constituted this volume shows that the population of Lancashire was, in 1931, roughly 5,040,000, of which nearly one-third was resident in Liverpool and Manchester.

[1] Arch. de méd. et de pharm. milit., September, 1935, p. 511.
[2] Census of England and Wales, 1931. County of Lancaster. Part II. H.M. Stationery Office. 2s.

ALUMINIUM IN FOOD

Dr. G. W. Monier-Williams, writing from the foods laboratory of the Ministry of Health,[1] summarises what is known about the effect of aluminium on the animal system, and contributes some useful experiments of his own. He points out that in fertile soils, aluminium, like iron and manganese, appears to be present almost wholly in insoluble form and that the soluble salts of these metals, especially of aluminium, make acid soils toxic to many plants. Since iron and manganese—and in some cases aluminium—are found in plants, they must reach their tissues in a soluble form via the soil water. Nevertheless aluminium does not appear to be a general constituent of plants, although in some it is found in appreciable or even considerable amounts, mostly in hydrophilic ones. It seems certain that in many cases aluminium found in roots has been left as a result of imperfect cleansing when preparing for analysis—a possibility which will be appreciated by anyone who has made analyses of root-ashes. Monier-Williams concludes that the aluminium consumed in properly cleaned vegetable food does not amount to more than 5 to 10 parts per million, but whether this small proportion is proper to the tissues or is contained in residual aluminium silicates from soil or dust it is as yet impossible to say. In animal tissues the highest proportion found—viz., 124 parts per million—was by Underhill and Peterman in the thyroids of pigs and rats, but their findings have been contested. Myers and his co-workers found only 1–2 parts in all organs, and other workers on the whole confirm the lower figures. In his discussion of analytical technique, Monier-Williams suggests that non-specific methods may have been responsible for some of the higher results.

The outcry however has not been directed against aluminium naturally present in foodstuffs, but against its introduction from vessels in which food is prepared. The action of food on aluminium vessels is, in general, slight. Monier-Williams found that whilst distilled water boiled in aluminium vessels and allowed to stand overnight contained no aluminium, tap water similarly treated took up from 7·7 to 19·2 parts per million. Dilute organic acids take up more than water, but the action of acids in foods seems to be retarded by the presence of colloids. Mutton broth with mixed vegetables, when cooked in an enamelled pan, contained 1·3 parts per million of aluminium, while a similar mixture in an aluminium pan contained immediately after cooking 7·0 parts; when kept in the same pan and reheated, after 24 hours, 10·6 parts, after 48 hours, 11·5 parts (he does not say what other metals were taken up from the enamelled vessel). The action of alkalis is well known; sodium carbonate should not be used for cleaning aluminium vessels unless it contains a small proportion of sodium silicate.

[1] Reports on Public Health and Medical Subjects. Aluminium in Food. By G. W. Monier-Williams, Ph.D., F.I.C. H.M. Stationery Office. 9d.

What happens to aluminium ingested with food? Since traces are found in most organs it is almost certain that some finds its way into the blood, though having regard to the ease with which it forms lakes and dilute solutions become sols, the amounts diffusing through the walls of the alimentary tract must be very small. It is not found, except in traces, in urine; what reaches the blood must therefore be removed via the intestinal secretions or bile, probably in the fæces as phosphate. It would seem likely, Monier-Williams suggests, that the diffusibility of aluminium salts into the blood through the wall of the digestive tract may vary appreciably with circumstances and with the nature of the stomach contents. Colloidal aluminium hydroxide has been administered internally as an antacid in doses of about a gramme; it is stated to be useful in peptic ulceration. Feeding experiments on animals, which received amounts very large in relation to the body-weight, showed but little action on the system, except possibly in young animals. But it should be borne in mind that the 2 mg. given to the rat as daily dose is equivalent to about 0·6 g. for a man. After discussing the clinical data Monier-Williams concludes that there is no convincing evidence that aluminium, in the amounts in which it is likely to be consumed as a result of using aluminium vessels, has a harmful effect upon the ordinary consumer. There may be individuals who are susceptible to even such small doses of aluminium as may be derived from aluminium vessels, but evidence of this is inconclusive.

THE JOURNALISTIC BLASTOMA

For his Schorstein lecture at the London Hospital on Oct. 17th Prof. William Bulloch chose the subject of Medical Periodical Literature and he asked his hearers to coöperate in stopping what he described as a malignant overgrowth. He supported the simile by an ominous picture of the shelves of the British Museum, already 60 miles in length, increasing relentlessly by a mile a year. All this fertility of expression took origin in the growth and multiplication of universities, followed by the invention of printing, and Dr. Bulloch was able to say with pride that at the end of the sixteenth century there were three universities in Aberdeenshire alone—one in Fraserburgh and two in Aberdeen—at a time when there were only two in the whole of England. But after this burst of patriotism he soon found himself once more in a mass of depressing statistics. In 1881, he said, Billings had estimated the number of doctors in the world at 180,000; to-day there were 57,000 in Great Britain alone and probably 400,000 or 500,000 all told. The World List of Scientific Periodicals, published in 1934, contains the names of 23,838 for the period 1900–31, of which Dr. Bulloch estimated that no less than 5000 are medical. Many of these were indispensable, many mediocre, and many valueless; one and all they made the task of the reader daily more arduous and more hopeless. It had been said that soon libraries would become cities and those of the population not actually writing would be engaged in cataloguing. Robert Fletcher, a London Hospital man who subsequently became Billings's chief assistant and successor at the Surgeon-General's Library in Washington, had remarked that the whole world was a conspiracy against medical bibliographers. The Index Catalogue of that Library was the greatest bibliographic work ever accomplished, and with the Index Medicus and the Quarterly Cumulative Medical Index now issued jointly with the American Medical Association, it is a storehouse of accurate information to which we all owe an immense debt of gratitude. But the 45,600 pages of the catalogue make alarming reading. In 1893 it contained the names of 7000 books or articles on syphilis: in the period 1893–1912 14,000 more were added, and in 1913-32 another 21,000. There were no less than 116 devoted to quadruplets, and between 1913 and 1932 a total of 1280 papers on tonsillectomy made their appearance. As for tuberculosis, he had calculated that between 1893 and 1932 at least 34,000 articles and books were published on this disease—850 a year, or more than two a day for 40 years! There are 31 periodicals in circulation dealing with tuberculosis alone. "If all this information were good and true," said the lecturer, "it would be idle to increase it"; but in fact there was not a single subject in medicine that could not be enriched by the humblest member of the profession. So he did not discourage the reporting of cases or observations. Medical writing however must be approached with serious purpose, and the writer should try to see how his views compare with those already on record—a purpose for which the Index Medicus is invaluable. Thus for the reform and reconstruction of medical journals which he demanded Prof. Bulloch seemed to pin his faith chiefly (but perhaps too optimistically) to the personal virtue of their contributors: they must eschew duplicate publication and verify their references and quotations from original sources. He also hopes for an extension of critical reviews which will show what is worth reading and what is not. But it must be admitted that—in the manner of pathologists—he seemed rather more intested in the morbid appearances of his blastoma than in its treatment. We are left with the hope that by the time every second medical man edits (and writes) a journal of his own the whole structure will break down through lack of nutrition.

SETTLEMENT OF THE LLANELLY DISPUTE

It will be a satisfaction to all who care for the good name of medicine in South Wales to learn that the long drawn-out dispute between the doctors serving the Llanelly area and the workmen's medical committee has now been settled. And not settled grudgingly, but with a declaration on both sides of goodwill and coöperation which should enable the new medical service in the New Year 1936 to be a model for similar services throughout the country. The terms of the agreement were set out in the supplement to the *British Medical Journal* last week. Every practitioner in the area who is entitled to be on the insurance committee's list may join the service. There are to be no whole-time appointments, and free choice is open both to doctor and patient, remuneration to be based on the rate which existed before the dispute occurred. Besides the general practitioner service the aim is to set up a complete consultative and specialist service, the one to be paid out of the practitioners' fund, the other out of a separate fund on a sessional, or payment for service, basis. Any local management committee is however at liberty to appoint consultants on a part-time salaried basis which bears some relation to this. Each management committee is to consist of representatives of the subscribing workmen and of the practitioners, seven of each, with an agreed independent chairman, and there is to be a similarly constituted central committee to which questions in dispute may be referred. It only remains to congratulate those whose statesmanship and forbearance have rendered such an agreement possible.

MEDICAL SERVICES IN THE ABYSSINIAN WAR

Senatore Aldo Castellani, now chief consulting physician to the Italian forces in East Africa, has made a statement, reproduced in the *Policlinico* of Oct. 14th, that the health of the troops and of the Italian workmen in East Africa is excellent. In the lower lying regions of Eritrea and in some parts of Somaliland there have been cases of malaria, dysentery, and heat-stroke, but these, he says, are few in number and not as a rule severe. This state of things he ascribes largely to the fact that no doctor is mobilised for service in the colonies until he has attended an intensive course in the Clinic for Tropical and Sub-tropical Diseases which Signor Mussolini founded in Rome three years ago. All the soldiers and workmen have been vaccinated against small-pox and inoculated for typhoid and paratyphoid A and B. Inoculation against cholera has now been started as a precautionary measure, though hitherto, it is stated, there has been no case of this disease along the coast of the Red Sea. The workmen, as well as the soldiers, are provided with helmets to protect them from sunstroke, and also cholera belts. *L'Azione Coloniale* gives the number of deaths among the Italian workmen (number unstated) employed in Eritrea during the four months, April 27th to August 28th, as 141, of which heat-stroke accounts for 84, cerebro-spinal fever for 9, and malaria for 6. Sixty of the cases of heat-stroke occurred in Massowah, where the moist heat in the summer months is described as suffocating, and work was not permitted between 10 A.M. and 5 P.M.

The *Siècle Medical* of Sept. 15th published an interview with the chief of the Army Medical Corps in Eritrea, describing the organisation for dealing with sick and wounded. Each battalion is provided with mules or camels to evacuate casualties to the nearest ambulance section. From here they go by motor ambulance, if there is a road, to the divisional ambulance, where there is a surgical unit. Behind the divisional ambulances are semi-mobile formations for the treatment of wounded who cannot be moved further back. On the sea coast, at Massowah, are hospitals for the sick and wounded awaiting repatriation, and at Asmara are groups of hospitals of which the surgical hospital contains 500 beds for the lightly wounded, 300 beds for more serious surgical cases, and 200 beds for eyes, ears, and throats. In all, provision has been made for 15,000 to 18,000 sick and wounded. The prophylactic use of quinine has been made obligatory for all men in camps below 1000 metres; it is given in 1-gramme doses on two consecutive days in the week. Chlorinisation of water is secured by the use of Sterhydrol, which is issued to all the hospitals.

On the Abyssinian side few arrangements have been made for the treatment of sick and wounded—apart from the efforts of medical missionaries and others who remain in the country. Response to the appeals made by the British Ambulance Service in Ethiopia has not yet been sufficient to allow of its full relief scheme being carried out, but a small advance unit is to leave shortly and will be reinforced as soon as public support suffices. At a meeting with the British Red Cross Society last week it was agreed that the executive of the British Ambulance Service in Ethiopia, which has been recognised by the International Red Cross Committee at Geneva as an integral part of the Ethiopian Red Cross, should remain responsible for the organisation and dispatch of relief to the Abyssinian war zone. To ensure coöperation of the two funds three members of the British Red Cross Society, including the director-general, Lieut.-General Sir Harold Fawcus, were coöpted to the executive committee of the British Ambulance Service in Ethiopia. An urgent appeal is made for the necessary funds, and donations may be sent to Sir Arthur Stanley of the British Red Cross Society, or to A. W. Tuke, hon. treasurer of the British Ambulance Service in Ethiopia, at Barclay's Bank, 54, Lombard-street, London, E.C.2.

TESTS FOR PURITY OF OXYGEN

PRACTITIONERS using oxygen in treatment need to be certain that it is pure. The tests given in the British Pharmacopœia are not very full, and in the *Analyst* for September Mr. R. F. Frederick usefully calls attention to better methods of examination. He makes a test, which is roughly quantitative, for carbon monoxide—a most undesirable impurity—by means of a proprietary reagent called Hoolamite, which is a mixture of pumice, iodine pentoxide, and fuming sulphuric acid producing a well-defined colour change, roughly proportional to the concentration of monoxide. This is claimed to be sensitive to 0·005 per cent. of carbon monoxide but does not seem to be trustworthy below 0·06 per cent. Mr. Frederick is primarily concerned with the determination of the oxygen content, for which the B.P. test is not very satisfactory, since it is based on absorption with pyrogallol in alkaline solution; and this is liable to yield carbon monoxide especially when the gas examined is, as in this case, rich in oxygen. A reagent he considers preferable is metallic copper in contact with ammonia, recommended by Hempel in 1892, and he describes a simple apparatus for the determination. In using this it must be remembered that in mixtures of oxygen and carbon dioxide the amount of the latter gas must be determined separately and deducted from the total amount absorbed by the copper reagent.

THE scheme for establishing a joint hospitals advisory board in Manchester was approved on Oct. 16th by the University council. The representatives appointed by the University are Sir Christopher Needham, chairman of council; Prof. J. S. B. Stopford, vice-chancellor; Prof. A. Ramsbottom, Prof. W. Fletcher Shaw, and Prof. E. D. Telford.

THE Buckston Browne dinner will be held in the library of the Royal College of Surgeons of England on Thursday, Nov. 14th, at 7.45 for 8 P.M. This annual dinner, at which at least half the invited guests are members of the College, has been held regularly since 1928, those present usually numbering about a hundred. After dinner there will be an exhibition of scientific and other films in the lecture theatre, and the museum will be open for inspection.

POST-GRADUATE COURSE AT BELFAST.—At the request of the Ministry of Labour for Northern Ireland, the third annual post-graduate course in medicine and surgery for panel practitioners was held during the second half of September at the Belfast medical school (the Queen's University acting in conjunction with the Royal Victoria and Mater Infirmorum Hospitals). It was attended by 25 practitioners. The morning sessions were devoted to the clinical examination of patients, and to discussions on diagnosis and treatment; in the afternoons there were lectures dealing with the more theoretical aspects of medicine, surgery, and the specialties, and with special problems arising in health insurance practice. It is proposed next year to open a limited number of places at this course to general practitioners other than those nominated by the Ministry of Labour.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LXXIV.—THE PROGNOSIS OF TETANUS

AN accurate prognosis in tetanus must be based on knowledge of the march of symptoms and signs in infections of different degrees of severity.

GRADES OF INFECTION

For convenience cases may be divided into four grades :—

1. Cases in which there is local tetanus only. This usually occurs when tetanus develops after a prophylactic injection of antitoxin. The incubation period is usually very long and the prognosis is good.

2. Cases in which there is generalised tonic rigidity only, involving particularly the masseters, the muscles of the spine, chest, and abdomen, and to a lesser extent the limbs. The incubation period is usually long, over 14 days, and the prognosis good. The tonic rigidity comes on gradually and then gradually passes off again. Reflex excitability is slight and reflex spasms do not occur. The whole process may last from one to four weeks and sometimes longer.

3. Cases in which the tonic rigidity described passes into the stage of reflex spasms. The reflex excitability gradually increases. At first manipulation of a limb merely increases its tone, but later the slightest movement of the bed-clothes throws the whole body into sudden violent contraction with opisthotonus which lasts from a few seconds to ten minutes. Such spasms occur with regularity. In patients who recover this state of reflex excitability lasts from a few days to a fortnight, at first becoming gradually more severe and then passing off. The reflex spasms stop and the tonic rigidity gradually subsides.

4. Cases in which the reflex spasms come on rapidly, sometimes within twenty-four hours of the first symptom, become rapidly more frequent and prolonged until they are almost continuous, and death, often preceded by hyperpyrexia, takes place from cardiac or respiratory failure.

In cephalic tetanus, which usually follows wounds of the head and neck, the course of the disease is less clearly defined. Convulsions and cranial nerve palsies may occur early and the muscles of deglutition and speech are more commonly affected.

HOW THE TOXIN ACTS

The symptoms of tetanus are due to the effect of tetanus toxin upon the cells of the central nervous system. Animal experiments by H. Meyer and F. Ransom (see THE LANCET, 1917, ii., 928) with injected toxin suggest that it passes up the axis cylinders of the motor nerves to the anterior horn cells in the brain and spinal cord. The experiments showed that the severity of the symptoms depends on the amount of toxin injected. With only a very small amount the motor cells of the limb injected are alone affected and local tetanus occurs. With larger amounts, toxin reaches the blood stream via the lymphatics, and passes up the motor nerves all over the body, so that the motor cells are affected generally and there is generalised tonic rigidity. In the nerve-cells a small amount of toxin sets up a condition of over-excitability, so that the reflex impulses which maintain the normal muscular tone become more effective and the tone of the muscles concerned is increased. If the dose has been somewhat larger its action extends to the receptor cells in the reflex arc in immediate connexion with the affected motor cells. With still larger doses more and more motor cells and more and more reflex apparatus in the cord become affected, and there is a general increase of reflex excitability.

In human tetanus, toxin is produced in the wound, and usually the more severe the wound the worse the prognosis. Penetrating wounds and secondarily infected wounds favour the development of *B. tetani* and the production of toxin, but tetanus frequently follows quite superficial wounds which, though dirty, have been allowed to scab over, so forming septic cavities in which anaerobes may flourish. Septic blisters also form cavities in which anaerobes may grow. The prognosis is usually better in superficial wounds of the latter type, because they can be completely cleaned, than in deep extensive or penetrating wounds which are difficult to drain properly or to excise completely. Wounds of the head and neck are particularly dangerous as cephalic tetanus may follow.

Death is caused by asphyxia due to prolonged spasm of the diaphragm and respiratory muscles, or by exhaustion and cardiac failure, with hyperpyrexia as a contributory cause.

GENERAL HEALTH AND AGE

The general health and physique of the patient is a very important consideration in prognosis. An attack entails prolonged involuntary physical exertion under conditions of severe suffering and general toxæmia. Any intercurrent disease or weakness must lessen the chances of recovery. For this reason the prognosis is bad in the aged, particularly on account of cardiovascular degeneration and chronic bronchitis and emphysema. It is also bad in infants and very young children.

INCUBATION PERIOD

It is well known that the severity of a case of tetanus is inversely proportional to the length of the incubation period. This period is of great prognostic value and it can usually be measured accurately, although there is always the fallacy that a wound may not have been infected with tetanus when it was incurred but that infection supervened later. Cases with a long incubation period of many weeks or months have usually followed a prophylactic injection of antitoxin. Such patients often have local tetanus and prolonged tonic rigidity is the most marked clinical feature. The prognosis is good and many would recover without treatment. As the incubation period becomes shorter reflex excitability and spasms become a more marked feature. With an incubation period of ten days or less the case is usually severe and the chances of recovery grow less. In my own series of 18 consecutive cases under 50 treated with one large dose of antitoxin on admission, all patients with an incubation period of seven days or longer recovered and only one with an incubation period of less than seven lived. The exception had an incubation period of five days. Other published series of cases show that it is rare for patients with incubation periods of less than seven days to recover and that under five days recovery hardly ever takes place.

"PERIOD OF ONSET"

A second measurement of value in assessing prognosis is the time from the occurrence of the first symptom,

usually stiffness of the jaw, to the appearance of the first generalised reflex spasms. For convenience this may be termed the "period of onset." In very chronic cases with a long incubation period, reflex spasms may not occur at all or only begin a week or ten days after the first symptom. In most cases the shorter the incubation period the shorter the period of onset. In my own series, patients with a period of onset of three days or longer recovered with one exception (three days). Two with periods of two days recovered but the others with two days or less died. In general it may be said that a period of onset of less than two days gives little hope of recovery; with three days there is a good chance and that the outlook improves as this period is lengthened.

The combined incubation period and period of onset are also worth noting. Usually they are proportional, a short incubation period being followed by a short period of onset and vice versa, but occasionally variations occur. In general a combined period of eight days or less means a bad prognosis, and with any figure larger than this the chances improve.

OTHER FACTORS

The length of the incubation period and period of onset are probably proportional to the amount of toxin reaching the nervous system. The figures given here are approximate only and apply particularly to cases in which further absorption of toxin from the wound is prevented during the first few days by a large intravenous dose of antitoxin, say 200,000 international units, and thorough treatment of the wound.

Another factor which has an important bearing on prognosis is the severity of the reflex spasms. When these are very severe and prolonged there is a danger of death from asphyxia during a spasm unless they are controlled. The prognosis is also worse in cases with early involvement of the muscles of deglutition or very severe trismus, as these make feeding difficult.

INFLUENCE OF TREATMENT ON PROGNOSIS

Tetanus is such a variable disease that the effect of treatment in any individual case is difficult to estimate. Death is brought about in several ways when a lethal dose of toxin has reached the central nervous system. The first aim of treatment is to prevent further absorption of toxin at the earliest possible moment after the diagnosis is made. This is done by giving a large dose of antitoxin followed by thorough treatment or excision of the wound. The second aim is to control the reflex spasms due to the already absorbed toxin, so that exhaustion is prevented and the danger of death from asphyxia minimised, and also to relieve pain and to promote sleep. The third is to maintain strength by giving plenty of fluids and nourishment. I have found Avertin of more use than any other sedative in controlling reflex spasms and lessening tonic rigidity of the masseters. By its use exhaustion is prevented and feeding made very much easier. Used early in repeated doses as large or larger than those used for basal anæsthesia, it has undoubtedly been the factor which has saved some patients. There can be no doubt that the earlier thorough treatment on these lines can be begun the better the outlook. Many cases are probably lost because there is unnecessary delay in making the diagnosis, and because even when it is made treatment is not sufficiently speedy or vigorous.

SUMMARY

Prognosis in tetanus depends on a consideration of the following points: the general health, physique, and age of the patient, the severity and treatability of the wound, the length of the incubation period, the length of the "period of onset," the ability to take nourishment, the severity of the spasms, and the speed and vigour with which treatment is begun after the symptoms have appeared.

In previously healthy patients between the ages of 2 and 50, with wounds that can be thoroughly treated and an incubation period of seven days or longer, the recovery rate should be 80 per cent. or more if thorough treatment is given within thirty-six hours of the onset. With shorter incubation periods the prognosis gets rapidly worse, and when it is less than five days almost every patient will die whatever treatment is given.

LESLIE COLE, M.D., F.R.C.P.,
Physician to Addenbrooke's Hospital, Cambridge.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

ROYAL NAVAL VOLUNTEER RESERVE

E. M. Buzzard entered as Proby. Surg. Lt.

Surg. Lt. A. R. Hunt placed on the Retd. List.

Proby. Surg. Sub-Lt. J. K. Sargentson to *Victory* for R.N. Hospital, Haslar, for training.

The following have been appointed Admiralty Surgeons and Agents: Mr. E. A. Saunders for Pembroke Dock, and Mr. J. Campbell for Southport.

ARMY MEDICAL SERVICES

Maj.-Gen. D. S. Skelton, D.S.O. (late R.A.M.C.), V.H.S., is appointed Hon. Surg. to the King, vice Maj.-Gen. J. W. West, C.B., C.M.G., C.B.E. (late R.A.M.C.), ret. pay.

ARMY DENTAL CORPS

Maj. N. H. Medhurst and Capt. R. G. Law retire receiving a gratuity.

ROYAL ARMY MEDICAL CORPS

TERRITORIAL ARMY

Maj. W. L. M. Gabriel to be Lt.-Col. and to comd. the 149th (Northumbrian) Fd. Amb., vice Lt.-Col. and Bt.-Col. J. A. Stenhouse, T.D., vacated.

Maj. J. D. Hart, M.C., having attained the age limit retires and retains his rank, with permission to wear the prescribed uniform.

Capt. A. D. Forgie resigns his commn.

Lt. J. L. Warner, late R.F.A. (Spec. Res.), to be Lt.

REGULAR ARMY RESERVE OF OFFICERS

Maj. C. J. H. Sharp, M.C., resigns his commn. and retains the rank of Maj.

TERRITORIAL ARMY RESERVE OF OFFICERS

Lt.-Col. and Bt.-Col. J. A. Stenhouse, T.D., from Active List, to be Lt.-Col. and Bt.-Col.

2nd Lt. E. F. Baines, from T.A. Res. of Off. (73rd (Northumbrian) Fd. Bde.), to be Lt.

SUPPLEMENTARY RESERVE OF OFFICERS

Lt. W. H. H. J. de Wytt, from Supp. Res. of Off., R.A., to be Lt., and W. H. Young to be Lt.

ROYAL AIR FORCE

Flying Offrs. G. H. Stuart to R.A.F. Station, Singapore, and R. A. Cumming to Medical Training Depôt, Halton, on appointment to a short-service commission.

Dental Branch.—Flying Offr. D. P. Boyle to No. 1 School of Technical Training (Apprentices), Halton.

RESERVE OF AIR FORCE OFFICERS

D. F. E. Nash is granted a commission as Flying Offr. in Class DD.

INDIAN MEDICAL SERVICE

Capt. T. R. R. Pai, M.B., relinquishes his temp. commn.

Indian Medical Department.—Capt. (Sen. Asst. Surg.) L. A. Francis to be Maj. (Sen. Asst. Surg.).

POST-GRADUATE LECTURES

FOR the fourth week in succession we publish summaries of lectures delivered to post-graduates at recent week-end courses in the London teaching schools. Prof. Browne's was delivered at University College Hospital and Dr. Livingstone's at King's College Hospital.

THE TREATMENT OF PLACENTA PRÆVIA

(PROF. F. J. BROWNE)

BEFORE dealing with methods of treatment it will be useful to lay down some general guiding principles.

1. Mortality from placenta prævia is much higher in domiciliary than in institutional practice. This is chiefly because only in the latter are proper facilities available for treatment.
2. Delay in treatment greatly diminishes the chances of success.
3. As hæmorrhage is the most frequent cause of maternal death every effort should be made to prevent loss of blood before, during, and after delivery.
4. As sepsis is the second most important cause of death all necessary examinations and manipulations should be carried out with the most strict attention to surgical asepsis and antisepsis.

If ante-partum hæmorrhage, however slight, occurs the patient should be removed at once to a hospital or some similar institution. The Departmental Committee on Maternal Mortality in its final report recognised this necessity, and recommended that the first onset of "warning hæmorrhage" should be the signal for removal to a hospital or an institution offering equal facilities. Before removal no internal examination should be made, for the cervix is usually so high up that it is impossible to get a finger through the internal os unless the patient is under a general anæsthetic and the whole hand in the vagina. Besides, internal examination may cause severe bleeding with which it is difficult to deal effectively in the patient's home. Neither should the vagina be packed before the patient is removed because, in the first place, it is impossible to pack properly unless the patient is under general anæsthesia; because, secondly, the insertion of a vaginal pack practically precludes Cæsarean section, should this be later considered advisable; and because, thirdly, it is doubtful whether the pack really controls hæmorrhage.

Before removal a hypodermic injection of morphia should be given and a tight abdominal binder applied together with a sterile vulval pad and perineal bandage. The binder should come well up over the fundus so as to press, as far as possible, the presenting part downwards on to the low-lying placenta. On arrival the patient should be blood-grouped, and the question then arises whether treatment is to be active or expectant.

EXPECTANT TREATMENT

Expectant treatment (rest in bed and sedatives) is indicated when the bleeding is slight and provided the patient can be kept under constant observation and that someone who is competent to deal with the case is living on the premises or near enough to reach the patient in ten minutes. The nurse in charge should be warned to send at once should bleeding start. If expectant treatment is being carried out a vaginal examination is unnecessary, and is indeed inadvisable. If, however, bleeding is severe, or continues in spite of rest, or if it recurs more than twice or thrice, resort should be had to active treatment.

ACTIVE TREATMENT

When it is decided that the case is one for active treatment it is necessary first of all to find out the exact state of matters by internal examination. For this purpose the examination should not be carried out on the patient's bed in the ward but only in the labour room or operating theatre with all preparations made to deal with bleeding should this be alarming, as it is apt to be after introducing the finger through the internal os. The patient should be grouped if this has not already been done, preparations should be made for blood transfusion, and if the patient has already lost severely a blood donor should have arrived at the hospital. In such cases, too, especially if the patient is not in labour, it is usually a wise precaution to have all preparations made for Cæsarean section so that if this is considered best it may be proceeded with after the least possible delay.

In carrying out this vaginal examination, a general anæsthetic should be given and the whole hand introduced into the vagina. To facilitate this it is a good plan to "iron out" the vagina by the method of Potter. With the patient in the lithotomy position, and the external genitals having been shaved and rendered surgically clean, one or two ounces of ether soap are poured into the vagina. One or two fingers are then passed up to the posterior fornix or as near to it as possible and the posterior vaginal wall ironed out by bringing the finger firmly downwards in contact with it as far as the vulva. Three, four, and five fingers are successively introduced and similarly used until finally it is possible to insert the whole hand easily and pass a finger through the internal os, and explore the situation of the placenta. Care should be taken to separate it as little as possible, so as to save unnecessary blood loss.

Now what are the methods of active treatment available? It should not be forgotten that many cases of placenta prævia (10–15 per cent.) need no treatment at all. These are chiefly those in which the bleeding is slight, and the placenta dips bu slightly into the lower uterine segment. When labour starts and the membranes rupture the presenting part descends and pressing on the placenta, prevents all further hæmorrhage.

Rupture of the membranes, followed by the application of a tight binder, is an excellent method of treatment if hæmorrhage is comparatively slight and labour pains are present and the os dilating, and the placenta does not extend beyond the margin of the internal os. Both the maternal and fœtal mortality are exceedingly low, chiefly because the method is used only in the milder cases.

Willett's forceps.—The use of this instrument should be confined to cases of partial placenta prævia. The membranes must of course be ruptured before applying the forceps and the head should be fixed by an assistant pressing it down as far as possible into the pelvic brim. A weight of 1½ lb. should be attached to the handles. The forceps give less complete control of the bleeding than podalic version and extraction of a foot, especially as they are sometimes difficult to apply and may easily slip off after a time, but they have the great advantage that they can be applied when the os only admits a finger. The fœtal mortality too is lower than after podalic version, as the risks attendant on breech delivery are obviated.

Podalic version followed by extraction of a foot.—The podalic version may be carried out either by external manipulation alone—perhaps the method most commonly used nowadays, especially if the child is premature—or by the bipolar method of Braxton Hicks, or, if the os is half dilated, by introducing the whole hand into the uterus and seizing and bringing down a foot. Before a foot can be extracted the os must admit at least two fingers. A weight of 2 lb. is attached to the foot by means of a gauze strip and allowed to hang over the foot of the bed, but as continuous pressure is thus exerted on the placenta the outlook for the child is improved if a gauze strip is simply attached to the foot and an assistant instructed to make traction on this should bleeding start. Delivery should always be allowed to occur spontaneously and slowly, and the *interval used to promote the patient's recovery from shock and the effects of blood loss, it may be by blood transfusion.*

Of all the conservative methods used in treatment of placenta prævia this gives the best control of bleeding, and in skilled hands the results as far as the mother is concerned are excellent. How good they may be is illustrated by the record of Stratz who in 110 cases treated by bipolar version, and all by himself, had a maternal mortality of only 0·9 per cent. (one death from pulmonary embolism), though the fœtal mortality was 64 per cent. Podalic version must therefore be still regarded as the standard method of treatment.

Vaginal pack usually followed by some other manipulation such as bipolar version.—This method is much used when the os does not admit a finger, the bleeding is severe, and the patient not in labour. The best packing material is sterile pledgets of cotton-wool that have been soaked in lysol solution and then squeezed dry. They are, however, difficult to remove without injuring the vaginal mucous membrane, and a sterile gauze roll is a good substitute. The gauze should be similarly treated—viz., soaked in lysol and then squeezed as dry as possible. The pack must be inserted under general anæsthesia, and it is necessary to lay a good foundation by packing the fornices firmly to start with so that the cervix is surrounded by a firm collar. On this firm foundation the remainder of the pack is inserted and driven well home so that it distends the vagina tightly as far as the vulva. The operation is completed by the application of a tight abdominal binder coming well up over the fundus, a vulval pad and perineal bandage attached to the binder in front and behind.

At best the vaginal pack is a septic appliance, and blood clots gather behind it and form an ideal culture medium. At the same time as a means of controlling hæmorrhage it is unreliable and not infrequently, even after the most painstaking insertion, the pack is found to be soaked through with blood. Neither can it be relied on as a means of inducing uterine contractions—thus causing dilatation of the os—the second advantage that is claimed for the pack. Finally, the insertion of the pack practically debars one from performing Cæsarean section even should that ultimately be regarded as necessary in the interests of mother or child. Statistics have shown repeatedly that the maternal mortality from sepsis is twice as high when the vagina has been packed. For all these reasons I believe that the use of the pack should be abolished or at least that it should be used only in the following combination of circumstances—a closed os, severe hæmorrhage, and the presence of some condition such as sepsis that renders Cæsarean section inadvisable. Stratz, whose results have been previously quoted, condemns the pack and did not use it in any of his cases. The alternative when the os is closed is Cæsarean section.

Of late years *Cæsarean section* has been coming into more frequent use in placenta prævia. This is not surprising when we consider that though by conservative methods and skilled treatment the maternal mortality can be reduced to a remarkably low figure, yet the outlook for the child remains consistently bad. Even Stratz in 173 cases, though his maternal mortality was 0·6 per cent., had a fœtal mortality of 44 per cent. Cæsarean section alone offers any hope of improving this. But the fœtal death-rate can never be really low—probably little less than 30 per cent.—for many children are too premature to survive and others are killed by placental separation before the patient is seen.

The indications for Cæsarean section may be defined as follows:—

1. Severe hæmorrhage when the os is closed or fails to admit a finger. The alternative is the vaginal pack.
2. If the os does not admit two fingers and the placenta entirely covers it. The alternative here is Willett's forceps, but it is undesirable to apply them through the placenta.
3. Placenta prævia of any degree in an elderly primigravida, or in any woman who demands a live child, if the os is less than half dilated, and provided the fœtus is viable (over thirty-five weeks), and the patient not infected.
4. Cases complicated by disproportion or other condition likely to lead to obstructed labour.
5. Patients in extremis where it is felt that manipulations per vaginam, or even a vaginal examination, may be attended by a further severe hæmorrhage that may prove fatal.

Management of the third stage.—After the child is born the most careful watch must be kept for post-partum hæmorrhage. It cannot be too strongly emphasised that *the great majority of the cases that end fatally from hæmorrhage do so because of post-partum hæmorrhage*, and that even a small post-partum loss, which would after a normal labour be of no account, may be enough to turn the scale against a patient already severely depleted by ante- and intra-partum hæmorrhage. Everything should therefore be ready for the immediate and energetic treatment of post-partum bleeding—including pituitary extract, ergometrine, hot douches, sterile gauze for packing, suture needles and catgut, and donors for blood transfusion. If the medical attendant is wise he will control the fundus himself instead of leaving it to an assistant. If hæmorrhage takes place in spite of the uterus being well contracted the cervix must be exposed by a speculum and examined. If it is torn and bleeding, a continuous locked catgut suture of double No. 1 catgut should be inserted immediately. As, however, the placental site is in the lower uterine segment, which does not contract and retract well, it may bleed freely even when the uterus seems well contracted. In such cases a hot intra-uterine douche at 118° F. may be of the greatest value and above all bimanual compression. Expression of the placenta by Credé's method is unnecessary as long as there is no hæmorrhage, but should this occur it must be expressed at once. If attempts at expression fail it must be manually removed.

VALUE OF BLOOD TRANSFUSION

The prophylactic and therapeutic value of blood transfusion should be constantly kept in mind by

those who have to treat cases of placenta prævia. About 65 per cent. of the patients who die, do so because of hæmorrhage, and most of these deaths could be prevented by the employment of measures directed to the replacement of the blood lost. Its great value has been strikingly shown by Bill, who, chiefly by means of it, reduced his maternal mortality from 11 to 1·8 per cent. The proportion of his cases requiring and receiving blood transfusion was 12·4 per cent. He points out that most patients who die of post-partum hæmorrhage do so because the anæmia consequent on ante-partum bleeding produces an atonic state of the uterus, so that it is unable to contract properly after delivery. To prevent this he gives blood transfusion *before delivery* to every patient whose red cell count is below 3,000,000 and blood pressure below 90 systolic and 60 diastolic. He advises that the transfusion should be in the hands of a member of the staff who is an expert in the technique and in the blood reactions. We have already seen that the patient should be grouped on admission and that a donor should, in every serious case, be on the premises before treatment is begun. If, for any reason, blood transfusion is impossible, saline infusion will be of value.

HIGH BLOOD PRESSURE AND ITS TREATMENT

(DR. J. L. LIVINGSTONE)

THE subject of high blood pressure is a large one, and I propose to restrict my remarks to a small part of it—namely, the treatment of Allbutt's "hyperpiesia," or "essential hypertension" in which the pressure is raised primarily and apart from renal disease or other obvious causes.

In my experience it is a common thing to find that patients have been treated for high blood pressure quite unnecessarily because the pressure has not be taken properly. I would remind you that it is important to have the patient reclining on a couch for a few minutes before taking a reading. A rough reading should be taken by palpation of the radial artery, noting the level at which the pulsation returns as the pressure is released. The valve should be released completely and then the systolic and diastolic pressures noted by auscultation over the brachial artery; the systolic pressure is read at the point at which the sound is first heard, the diastolic pressure when the sound suddenly changes from a ringing to a dull muffled sound. The valve is released completely and the process repeated, until the pressures become stable; this often requires three to five readings, the last usually being the lowest. With nervous people two further examinations should be made, on separate days, before the true blood-pressure reading is considered established.

Most observers agree that a persistent reading of more than 150 mm. Hg systolic and 100 mm. diastolic may be taken as abnormal. The diastolic pressure, being an estimate of the load which the arteries have to support, and against which the heart has to work continuously, is probably of more importance than the systolic figure; it is also more constant. The pulse pressure should not exceed 60 mm. and it is a definite guide as to the cardiac output.

From the clinical side we know that in the early stages of the disease there are no symptoms; the only guide is a raised blood pressure, often of a fluctuating type, but later becoming more constantly raised. It is only in the late stages of the condition when the arterioles, at first spasmodically contracted, are permanently narrowed by intimal thickening, that symptoms are conspicuous. The clinical classification of benign or red hypertension, with death after the sixth decade, as compared with the malignant or pale type, associated with renal damage and death before 50, is perhaps worth noting.

ÆTIOLOGY

When we consider the ætiology of hypertension we are confronted with a mass of theories, and as yet our knowledge is very incomplete. In animals there is only one method of causing a persistent rise in blood pressure—the destruction of the aortic and carotid sinus nerves (Heymans et al., Sinus Carotidien, 1933). In the dog the blood pressure rises to 300 mm., and there is hypertrophy of the left ventricle with interstitial fibrosis of the kidneys. In man evidence of disease of the carotid sinus, as associated with hypertension, has not been definitely proved.

Pitressin, a hormone from the posterior pituitary, definitely raises the blood pressure in animals temporarily. In man hypertension may be associated with basophil adenomata (H. Cushing, 1933), but excess of basophil cells is not found constantly in the pituitary glands of hyperpietics. Adrenaline raises blood pressure also, in animals, and in man suprarenal chromaffin tumours have in rare cases been associated with hypertension, which has disappeared after removal of the tumour (C. H. Mayo, 1927). Recent work points to the pressor effects of the pituitary, suprarenals and thyroid, acting via the sympathetic system, and to the depressor action of the pancreas, acting on the parasympathetic or vagus system. The recently isolated pancreatic hormone, Vagotonine, seems to have important depressor effects: (1) it increases vasodilator tone while decreasing vasoconstriction; (2) it slows the heart-rate; and (3) it inhibits the action of adrenaline.

I would draw attention to the recent observations of Parkinson and Hoyle (1934) on the importance of latent hyperthyroidism in hypertension. No doubt we can all call to mind cases of hypertension exhibiting tachycardia, tremor, and loss of weight, with slight enlargement of the thyroid. In view of the recent work in America on the total ablation of the thyroid gland in cases of congestive heart failure associated with angina, this observation of Hoyle and Parkinson is of considerable importance.

From the clinician's standpoint, however, the ætiology is obscure though two facts stand out: (1) the marked familial incidence of hypertension; (2) the apparently increasing frequency of the condition, which seems to be associated with the "speeding up" of work and play in modern life. The frequency of high blood pressure may be appreciated from the fact that in the United States the mortality due to its consequences is estimated at 10 per cent. of the total mortality—a figure greater than the total death from cancer, tuberculosis, and respiratory diseases (including pneumonia) combined. Halls Dally, in his book on High Blood Pressure (1934), gives an estimate of 7 per cent. for this country.

The ratio of actual to expected deaths from the point of view of the life assurance societies, as given by Otto May, is shown in the following Table. These figures speak for themselves as regards the seriousness of the condition.

TREATMENT

1. *The early case.*—The patient is a young man; his symptoms are negligible; there is no evidence

of hypertrophy of the cardiovascular system, a fluctuating blood pressure being the only sign. He should be kept under observation and the blood pressure should be recorded perhaps twice a year; the actual figures should not be communicated to him, for this is apt to cause a blood-pressure phobia. Excesses of all sorts should be avoided, especially as regards tobacco, alcohol, long hours of work, and late nights. Nine hours in bed on five nights a week is good advice. Causes of underlying anxiety and worry should be discussed and put right if possible. Hard physical exercise should be encouraged because it directly lowers the pressure. A course of bromide or Luminal in the highly strung type may be prescribed with benefit for some months. These simple measures are sometimes sufficient and the fluctuation in the blood pressure may become less marked as a result of them.

Mortality among men and women taking out policies with the Prudential Society during the period 1920–24. *The ratio of actual to expected deaths among ordinary branch policy-holders medically examined is taken as* 100. (*Abridged from* ***British Medical Journal***, 1925, ii., 1166.)

Systolic pressure at entry.	Mortality.
Not recorded	97·1
Under 140 mm.	102·8
140 to 170 ,, ...	133·6
Over 170 ,, ...	219·6
Over 200 ,, ...	827·5

2. *The medium case.*—Here, let us say, there is a persistently raised blood pressure (150/95 or over), but without signs of hypertrophy of the heart or vessels and with few symptoms. In such a case the treatment must be more definite and drastic, the patient should be warned that he is on the way to becoming a hyperpietic and that he must take treatment seriously. The daily round of wear and tear must be reduced drastically; office hours should be shortened, overtime work prohibited, and a half day's golf should be taken in the middle of the week with a restful week-end. Driving a car through traffic to and from work should be avoided, the patient using a chauffeur or public forms of transport.

The diet should be restricted in rich purines, liver, kidney, shell-fish, and so forth; red meat should not be taken more than once daily; and on Friday the diet should be strictly vegetarian. In the adipose type of patient the fats, potatoes, puddings, pastries should be curtailed and the bulk of the diet should be made up by green vegetables, salads, and fruits. The weight should be recorded weekly; an hour a day should be given to walking and other exercise. A Turkish bath once in ten days is useful.

A course of iodine should be given—e.g., Lugol's Iodine Solution,

℥ v.
℥ vii. } Night and morning for a week
℥ ix.
℥ xi.

and then ℥ vii. each night for six weeks.

I find it best to give the patient a dropping bottle of the solution and let him count the drops himself into a small glass of water. Small doses of thyroid to decrease weight, and with the idea of diminishing the arterial thickening, are often useful. I rarely use a bigger dose than gr. 1 daily. Sedatives should be given for sleep if necessary and nine hours should be spent in bed each night.

Septic foci should be sought for and treated. The bowels should be kept well open with a daily small dose of salts and a weekly blue pill.

If there is not much improvement after six weeks of this régime, the patient should be put to bed for six weeks. If he had pulmonary tuberculosis, an enlarged prostate, or even an acute appendix, rest in bed would be regarded as essential. Hyperpiesia is quite as serious a condition, and this aspect of the matter should be put to the patient and will often assist in making him consent to undergo treatment in bed.

The type of case with tachycardia, nervousness, moist hands, and possibly auricular fibrillation is not uncommon, and special attention should be paid to enlargement of the thyroid. Mild grades of hyperthyroidism are probably more common than is generally suspected, and partial thyroidectomy may result in a substantial and persistent lowering of the blood pressure in these cases.

3. *Advanced cases.*—There is a persistent blood pressure of over 180/110 and signs of myocardial hypertrophy, angina of effort, and possibly retinal vascular disease; there may be evidence of early renal failure. The treatment of these patients can only be palliative but much can be done to minimise symptoms and to prolong life. It must be remembered that this class of case requires a moderate hypertension to keep up the renal circulation; there is an optimum pressure at which the symptoms are least marked; if the pressure falls much below or rises much above this level, the patients do not feel so well. The main therapeutic remedy is rest in sufficient dosage. The vasodilator drugs, as a rule quite useless in the prevention of hypertension, may have an effect on these patients and keep the blood pressure within limits.

Erythrol tetranitrate, gr. ¼ to gr. ½, or mannitol hexanitrate, gr. ¼ to gr. 1, six-hourly, have a more prolonged action than sodium nitrite or nitroglycerin. Headache and flushing are often troublesome with these drugs, but by careful adjustment, a suitable dose may be found. Euphylline (theophylline-etheline-diamine) grs. 1½ or theobromine grs. 5, may also be tried. Vagotonine, a pancreatic hormone, has a definite action on the arterial tone: daily injections of 0·02 g. for three weeks may cause a definite fall in pressure, which persists for some weeks (Halls Dally). If there is no marked lowering of the blood pressure after the first dose, it is probably not worth while continuing this drug. Acetylcholine 0·1 to 0·2 g. subcutaneously has a similar action, and Bayer's Padutin (Kallikrein), which may be taken by mouth in tablets containing three units, is said to have a definite effect.

The Anglo-French Drug Company have recently produced a tablet named Hypotan, which is said to contain methylacethylcholine bromide 5 mg., bromocholine bromide 5 mg., and chloral hydrate 5 cg. (gr. ¾). On theoretical grounds this should lower blood pressure. I have no practical experience of the drug however, as it has been only recently introduced.

NEW MENTAL HOSPITAL AT BRISTOL.—Bristol city council have decided to proceed with the erection of a new mental hospital at Barrow Gurney. Two years ago it was estimated that it would cost £187,000, but the increased cost of wages and materials have now brought the total to about £250,000.

MOUNT VERNON HOSPITAL, NORTHWOOD.—The heavy demands on this hospital have made it necessary to extend the X ray department. This will involve an expenditure of £10,000, and as the last couple of years' expenditure has exceeded income by over £5000, the hospital is forced to make a public appeal for funds.

SPECIAL ARTICLES

BRITISH MEDICAL ASSOCIATION

MEETING IN MELBOURNE

SECTION OF PATHOLOGY AND BACTERIOLOGY

Prof. A. MURRAY DRENNAN (Edinburgh) presided over this section, when Prof. H. A. WOODRUFF (Melbourne) opened a discussion on

Some Toxæmias of Animals due to Anaerobic Organisms

Prof. Woodruff gave a comparative account of recent work on anaerobe toxæmias in animals, and indicated the bearing of this on the toxæmia of intestinal obstruction in man, the nature of which was still controversial. The first disease discussed was "black-leg" in calves, a disease which attacked healthy young animals producing a local necrotic infection of limb muscles, due to *B. chauvæi*. Although it was not possible to cause infection experimentally by simple ingestion of cultures, ingestion was believed to be the natural route of entry of the organisms, infection by which was probably determined by some other unknown factor. Prophylactic vaccination was effective. Braxy in sheep was an infection of the abomasum or true stomach by *vibrion septique*, and an important predisposing factor appeared to be the chilling of the stomach by cold masses of food in the contiguous rumen during frosty weather. Animals surviving the first winter on a braxy farm were thereafter immune; vaccination also gave good protection. Black disease or infective necrotic hepatitis of sheep was an infection by *B. œdematiens*, which was closely associated with liver fluke. Large doses of *B. œdematiens* spores could be given to sheep by mouth without harm; these spores, however, could lie latent in the animal's tissues, and subsequently become active during the period of migration of the liver fluke, which thus acted as a directing factor in causing the necrotic hepatitis. Vaccination against *B. œdematiens* and anti-fluke measures were effective preventives. Infectious entero-toxæmia of sheep was a disease with close resemblances to the toxæmia of paralytic ileus in man. It was caused by *B. ovitoxicus* which multiplied in the bowel contents, in which an absorbable highly potent toxin was produced. The resulting toxæmia was the essential feature of the disease, in which the tissues of the body were not invaded by the bacillus. Two other anaerobic organisms causing disease in sheep were *B. paludis* and the bacillus of lamb dysentery. It was of great interest to note that between *B. welchii*, *B. ovitoxicus*, *B. paludis*, and the bacillus of lamb dysentery close cross-toxicity relationships existed. Here was a group of bacteria with different but related toxic effects. Clearly in the investigation of anaerobic infections, proper antigenic analysis and toxin identifications were of first importance, since infections serologically different would require different serum treatment.

Prof. C. E. HERCUS (New Zealand) referred to the kinds of anaerobe infections seen in New Zealand. Tetanus had a patchy distribution there; and, although catgut infection was suspected in a number of cases, the tetanus bacillus had not been isolated from the gut. There was no record of botulinus infection in New Zealand. Clostridia infections occurred occasionally; in several cases they appeared to have been determined by pyogenic infections. As to anaerobe infections in animals, black leg and entero-toxæmia were present in New Zealand; but there was no braxy, and black disease was seen only in one area. Prof. Hercus doubted whether entero-toxæmia had any analogy in human pathology. He believed that nutritional factors were important in predisposing to entero-toxæmia infections.

Dr. G. H. OXER (Western Australia) agreed with the last statement. He believed that braxy existed in sporadic form in Australia. The development of active immunity was of great importance in these infections, subclinical but immunising attacks of which must be frequent. Vaccine immunisation gave good results; and there was evidence that vaccination of pregnant ewes conferred on the lambs a passive immunity to lamb dysentery which lasted for some weeks after birth.

Dr. C. W. ADEY (Melbourne) urged the necessity for distinguishing between the pseudo-toxins and true toxins of anaerobic bacteria. The pseudo-toxin of *B. welchii* would kill a mouse immediately; the true toxin caused death in 2 to 24 hours, and an important symptom was hæmoglobinuria due to the hæmolytic element which was always present in the true toxin. The hæmolytic effect was responsible for the jaundice and hæmoglobinuria in women with post-abortive *B. welchii* infections. The fact that paralytic ileus was not accompanied by signs of hæmolysis suggested that the true toxin of *B. welchii* did not play the main part in the resulting toxæmia. Dr. Adey advanced reasons for believing that entero-toxæmias might be due to the pseudo-toxins of the responsible organisms.

Dr. L. BULL (Melbourne) suggested that hæmolysis in *B. welchii* infections denoted blood stream invasion. He believed that there was no illness in man comparable with entero-toxæmia in sheep.

Prof. WOODRUFF, in reply to Prof. Hercus, said that he thought it quite possible for a pyogenic infection to determine an anaerobe infection; and he demonstrated how, on plate cultures, the growth of an aerobe on one part of the plate could facilitate the growth of an anaerobe on another part.

Inapparent Virus Infections

This was the title of a discussion opened by Dr. F. M. BURNET (Melbourne), who said that a virus or bacterial infection might be mild and inapparent or frank and obvious. From an ecological point of view, it would be advantageous to both the host and the parasite that infections should be mild and not destructive to the host. Hence we might expect that most infections would be inapparent. This was certainly true of many virus diseases, and probably of all endemic diseases. Inapparent infections were of great importance because they were immunising. In the development of immunity there were three phases: (1) passive immunity transferred to the young from the mother and lasting for a variable period of early post-natal life; (2) active immunisation during childhood as the result of inapparent infections; (3) reinforcement of this active immunity as the result of repeated contacts with the parasite in adult life. The curves of age-incidence of typhoid, typhus, pneumonia, cerebro-spinal fever, poliomyelitis, scarlet fever, diphtheria, &c., all accorded with this conception of the development of immunity.

Dr. Burnet discussed psittacosis in some detail. He had found this disease very prevalent in many species of wild and confined Australian parrots, usually without causing any symptoms of illness in the infected birds. In other words, most of the infections were inapparent. There was a nice equilibrium established between the bird and the virus, an equilibrium which had probably been in existence for a very long period. No cases of human psittacosis had been seen in Australia. Poliomyelitis was almost certainly present in all civilised communities, mostly in inapparent immunising form. Here again there was an equilibrium between host and parasite. Outbreaks of the disease in clinically apparent form were due to the disturbances of the equilibrium by other factors which modified either the condition of the host or of the virus. Although there was no proof, Dr. Burnet thought it possible that the outbreak of X disease in Australia in 1917–18 might have been due to the virus of louping-ill.

Prof. H. K. WARD (Sydney) paid a tribute to the researches on influenza by Laidlaw, Wilson Smith, and Andrewes who were leading the way to possible control of this major epidemic disease. He commented on the nature of interactions of viruses, immune sera, and complement, reactions which are still obscure. With regard to the long duration of immunity in virus diseases, he suggested the possibility that the virus persists in the body and excites antibody formation throughout life.

Dr. BULL held that no essential differences existed between the epidemiology and the serology of virus diseases and bacterial diseases. He thought too that the concepts brought forward by Dr. Burnet should not be regarded as general "laws of nature." When a pathogenic virus had more than one host, the problem was complex, and the equilibrium between parasite and hosts would be less exact. Moreover, the effects of alcoholism, disease and habits on the incidence of virus infections in adults must be taken into account in interpreting our age-incidence curves for these infections.

Dr. E. V. KEOGH (Melbourne) considered Dr. Burnet's hypotheses reasonable and suggestive. A major difficulty in virus work was the lack of cheap satisfactory indicator animals. The use of the developing chick embryo as an indicator, devised by Dr. Burnet, was a great advance in virus research. The number of lesions developing in the chorio-allantoic membrane was an accurate measure of the intensity of the virus, and the antibody content of immune sera could be estimated by its effect in reducing the number of lesions.

Prof. HERCUS said that Dr. Burnet's remarks raised profound evolutionary problems. The New Zealand experience of poliomyelitis suggested that, following the initial introduction of the disease, there had been a gradual attainment of equilibrium between virus and host. Did the attainment of equilibrium eliminate the risk of serious epidemic outbreaks? The influence of nutritional and other environmental factors on the age-incidence curves and district distribution of virus diseases must be considered.

Dr. BURNET, in reply, agreed with Dr. Bull that the epidemiological and serological features of virus and bacterial diseases were essentially alike. With regard to immunity in virus diseases, the persistence of the virus in the host's tissues must be admitted as a possibility, but usually the permanence of the immunity was due rather to persistence of the disease not in the individual, but in the community, the individual having his immunity constantly reinforced by intermittent contact with the parasite. In reply to Prof. Hercus, he said that the experience of other communities—e.g., in New York—showed that the attainment of general equilibrium between the poliomyelitis virus and host did not ensure against future serious outbreaks in the young.

Dr. A. BOLLIGER (Sydney) read a communication on

Determination of Hæmoglobin as Globin Picrate

The method depended on the acid-combining power of globin. The essential features were that alcoholic picric acid solution was added to the hæmoglobin solution or to the red blood-cells, the precipitate was washed with alcohol and ether, and the picric acid content was estimated by titration with methylene-blue. The estimation could also be made by titrating the residual uncombined picric acid. The results of the method agreed very closely with those of the gasometric methods of Haldane and Van Slyke. In reply to a question by Prof. Drennan regarding the sensitivity of the test, Dr. Bolliger said accurate results had been obtained with as little as 0·1 c.cm. of blood.

SECTION OF MEDICAL SOCIOLOGY

Dr. E. KAYE LE FLEMING (Wimborne) presided over this section when Dr. ALLAN VICKERS (Western Australia) opened a discussion on the

Australian Aerial Medical Services

He said that it was due almost entirely to the inspiration and tenacity of purpose of Rev. John Flynn that the Aerial Medical Service, commonly known as the "Flying Doctor" service was established. Mr. Flynn's work as superintendent of the Australian Inland Mission (the Bush department of the Presbyterian church) had, since 1912, taken him constantly into the huge sparsely settled areas of the back-country. In Australia, close settlement was confined to the eastern and southern fringes of the continent. Over the remainder, in an area larger than Western Europe, were scattered thousands of settlers, whose nearest neighbours were of the order of 100 miles distant, and whose nearest hospital and doctor were often 200 miles away. Their means of communication was primitive, perhaps a ride on horseback of 60 to 70 miles to the nearest telegraph station. Roads were often only bush tracks impassable in the wet season. It was in times of acute illness that the delay in securing medical advice, and the transport difficulties, emphasised this isolation. Mr. Flynn was responsible for the establishment of small hospitals, staffed by two trained nurses, at some of the most isolated spots; and he conceived the idea of an aerial medical service, with a central base. Such a service would have been of little use without some means whereby the outback settler could summon the doctor to his aid, and Mr. Flynn's solution of this problem was the installation of wireless apparatus. Technical difficulties were overcome by the ingenuity of the chief wireless engineer, Mr. Alfred Traeger, and financial assistance was received from many individuals and organisations, chief of which was the H. V. McKay Charitable Trust.

In May, 1928, the first aerial medical service base was established at Cloncurry (Queensland). Experimental in its inception, it soon proved its usefulness and practicability. Seven members of the medical

profession in Australia have, in succession, acted as medical officer in charge at Cloncurry for periods ranging from six months to three years. The people whom it served regarded the Aerial Medical Service not as a novel experiment, but a proven safeguard to be relied on in their hour of need. Dr. Vickers said that the central wireless station, at the Cloncurry base, employs a maximum power of 500 watts, operable on several wave-lengths. Messages outwards to small sets are sent in ordinary voice so that reception at the outposts is as easy as listening-in to a broadcasting programme. These outpost sets not only receive, but also transmit messages to the Cloncurry base. The source of power for the transmitters is a small high-tension generator driven by bicycle pedals, thus avoiding the maintenance of a complicated engine and the necessity for an unfailing source of fuel. All that is necessary is man-power. For distances up to 200 miles, communication from an outpost set to Cloncurry, or between two outpost sets, can be carried on in ordinary voice. For greater distances, it is considered advisable to use Morse, which has been made available to all by a typewriter adaptation. Dr. Vickers said that outposts were being added as funds permitted; at present there were 35, scattered over Northern and Central Australia. The most distant was over 700 miles from Cloncurry. The ambulance aeroplane was a cabin type of machine adapted to carry a full-length stretcher, with room for the doctor beside the patient. A complete battery-operated transmitting and receiving wireless set enabled the doctor to keep in touch with his base. Fuel supplies were often carried from rail-head by camel for distances up to 400 miles. Petrol costs as much as 4*s*. 6*d*. per gallon.

Dr. Vickers proceeded to outline the activities of the Aerial Medical Service; medical advice by wireless; emergency treatment, including that of major surgical catastrophes and of less serious, but disabling conditions; coöperation with other medical practitioners, and the supervision of outlying hospitals without a permanent medical staff. He stressed the fact that residents in isolated districts felt an increased sense of security in the very existence of the service. The area covered from the Cloncurry base was up to a radius of about 400 miles, an area, in fact, just a little larger than the British Isles. Occasionally, flights had been made far beyond this boundary, the longest yet made being 2500 miles, in the course of which the patient was transported 1250 miles. The value of the service to Queensland and inland Australia was inestimable. The development of the scheme was national in character. It was hoped that the development and control would remain in the hands of public-spirited individuals and organisations, with a certain measure of Government support and assistance. There had been formed an association known as Australian Aerial Medical Services, a section of which was to be established in each state, with headquarters in the capital city. It was hoped to establish bases at Port Hedland and Wyndham in the near future, and three others later on. Dr. Vickers concluded with a tribute to the memory of the late Dr. Dunbar Hooper, and expressed the hope that the various dominion services, though independently controlled, might achieve some measure of coördination under such a title as the British Empire Aerial Medical Services, with all the prestige which that great name would confer.

Rev. JOHN FLYNN (Sydney), after an expression of appreciation of the interest manifested in the scheme, spoke of the immeasureable loneliness of the Australian central desert lands. The railways radiated centrally from the coast, but stopped far short of the central lands. The cities were with minor exceptions all coastal. The rainfall of the northern parts of Australia was quite good, and the land was therefore habitable. In indicating the situation of the 35 outposts mentioned by Dr. Vickers, Mr. Flynn showed that one-half were in settled areas of the continent. Plans had been formulated for the ultimate endowment of 500 such outposts. He emphasised the coördination necessary for any such scheme, the necessity for a national conception of the scheme, under one control, the ideal of a British Empire aerial medical service, and the desirability of establishing a travelling scholarship for doctors as a means of spreading ideas and of promoting understanding.

Dr. J. NEWMAN MORRIS (Melbourne) referred to the needs of isolated centres, and the desirability of a continuous medical service. There were no parts of Victoria more than 20 miles from medical aid, and yet medical assistance was greatly welcomed in the relatively remote parts of this state. The Aerial Medical Service involved no encroachment on private practice. The service functioned where no private practice existed.

Dr. G. SIMPSON (Melbourne) remarked on the similarity between the Aerial Medical Service in Australia and the Highlands and Islands service in Northern Scotland. He gave a general description of the method of working of the scheme and, with the aid of lantern slides, described the conditions of life in those parts of Australia served by the service.

A discussion on

Social Aims of Mental Hygiene

was opened by Prof. HARVEY SUTTON (Sydney) who read a paper on the *Child Guidance Clinic*. He said that problems of behaviour, especially bad habits—"the everyday problems of the everyday child"—had long been the subject of discussion. Controversy as to school discipline and corporal punishment seemed to have originated in England with the appearance of grammar schools in the early sixteenth century. In Elizabethan days, schoolmasters showed an implicit belief in the maxim of Solomon: "Spare the rod and spoil the child," and the ability to flog pupils became for over two centuries one of the vocational attributes of the pedagogue. It was thought apparently that the birch tree was the tree of knowledge. Ascham, the tutor of Queen Elizabeth, protested against the universal indiscriminate use of corporal punishment. John Locke, physician, philosopher, and politician, had written a book, in every way modern, on "How to bring up your children." The author was himself a bachelor, and exercised the perennial right of the unmarried to instruct parents in their duties. He showed that corporal punishment was of little value, but it required a generation of universal education to discredit its use. Making the punishment fit the crime by making "the prisoner pent—unwillingly represent—a source of innocent merriment" might prove a solution, for ridicule and shame were, as Locke pointed out, powerful influences. Increasing experience, however, pointed to other methods; just and unemotional criticism, encouragement of good efforts, the selection of sound interesting outlets for energy, and better personal understanding between teacher and pupil. Like the gyroscope, children reacted best to indirect influences. How often did

we find that the longest way round was the shortest way home?

Dr. Sutton dealt with bad habits and their correction. Important amongst these were bed-wetting and masturbation. In regard to the former, the speaker strongly deprecated drug treatment, and emphasised the need for encouragement and sympathetic understanding. Perhaps of all bad habits masturbation was the best example of the failure of ignorance. For years moral propaganda had described the alleged rotten effects on the central nervous system, but now we knew that masturbation was a symptom of mental instability rather than a cause, and that even habitual practice was injurious only to certain special types of person. The frequency of appearance of the male emission was not known. In a group of 100 medical and other university men students investigated, there appeared to be a more or less regular rhythm of some 14 days, becoming more regular after the age of about 21 years. This emission was of course strictly physiological, and illustrated the need of meeting the natural curiosity of the adolescent with simple truthfulness.

Stammering was a constant problem in school life. In New South Wales, about 1 in 40 boys showed disorders of speech, chiefly stammering, whilst in girls the frequency was only about one-third and then not to the same degree. The defect could be a very real nuisance to the individual. The idea of classes and clinics collecting groups of stammerers used to be viewed adversely, but the atmosphere of success and the expert teaching made possible in these clinics more than outweighed any such disadvantage. The proportion of left-handed children amongst stammerers was higher than the proportion in the school population, about five to one. Evidence seemed to show that the left-handed stammerers had been changed to right-hand writers under pressure or penalty—another example of the danger and futility of repressive methods.

Other minor defects might influence the mental and physical progress of the child. Amongst these were defects in vision, hearing, nutrition, congenital heart disease, and so forth. Myopia might lead to the "shut-in personality." Unilateral deafness and colour-blindness often lead to unsuspected mental conflicts.

The doctor's part in assisting the child to adjust his problems was an important one. It was during the pre-school years when the child's character was being formed that the parent especially needed such help from the doctor. The development of child guidance clinics raised several important questions—where should they be located? By whom should they be staffed? What would be their objective? Hospitals were frequently chosen, where the medical control was unquestioned. The Education Department also provided suitable locations. Outside these two official relationships there were private clinics, the best leader being a medical man, with wide sympathies, a deep personal interest in children, and the gift of handling them. The combined physician, pædiatrist, psychiatrist, and school doctor should have as his second in command a trained educational psychologist, and the third of the trio was the trained health or home visitor, to evaluate the patients and the home. In conclusion, Dr. Sutton emphasised the importance of biological, physiological, and medical training for those who wished to gain the fullest appreciation of the problems of personality.

Dr. K. S. CUNNINGHAM (Melbourne) recalled the fact that Dr. Sutton had introduced intelligence tests locally in 1913. As a non-medical man he regarded it as a great privilege to be allowed to join in this discussion. He thought that those who called themselves psychologists should have some qualifications before doing so. In reference to child guidance clinics, all children needed guidance of some sort.

Mr. G. A. OSBORNE (Education Department, Melbourne) said that the policy of the Department was that sex education was definitely taboo in Victorian schools. In reference to discipline, corporal punishment had practically disappeared because of the better understanding between teachers and pupils. There was more real happiness in the work. The Department attributed importance in the make-up of the child not only to heredity, but also to environmental factors, particularly in the pre-school age. Their policy included the provision of more nursery schools and kindergartens, special schools for the mentally deficient, and the encouragement of the formation of school clubs. Specially trained teachers, social workers, and psychologists were essential.

Prof. J. A. GUNN (Melbourne) spoke of the coöperation of the three team-workers mentioned by Dr. Sutton. The training of psychologists was most important, and we were undoubtedly suffering from a plethora of untrained people who assumed the title. There was a large and important tract of country between the normal and the abnormal. One's attitude to life was largely decided by the reaction to fear and to sex.

Dr. R. ELLERY (Melbourne) discussed the attitude towards crime and delinquency from the psychiatric viewpoint. The idea that punishment could be useful in the curative treatment of maladjustments was wrong. One's attitude towards crime was largely conditioned by unconscious motives and repressions; there was no such person as an unbiased judge, whilst verdicts might be the expression of subconscious sadism. The study of delinquent children was of great moment.

Dr. J. F. WILLIAMS (Melbourne) recounted his experiences at the psychiatric clinic started by Prof. R. J. A. Berry at the Children's Hospital, Melbourne. Children examined included mentally deficient and emotionally retarded, and those whose physical defects were the real cause of their difficulties. Epileptics were a great problem. He thought that nursery schools were very useful, particularly for the borderline cases.

Prof. W. S. DAWSON (Sydney) thought that child guidance clinics should be controlled by medical men. There was a great need for the education of both parents and social workers. In reference to the mentally deficient, and also of the dull "normal" child, the development of institutional methods was necessary.

Miss HISLOP (Melbourne) said that her experience as directress of the training of social workers had satisfied her that team-work along the lines suggested by Dr. Sutton was best. She stressed the difficulty of assessing and improving home conditions unless there was a line of approach to the parents other than through the child. Social workers had a very difficult task, and some grounding in the principles of psychiatry was required.

Dr. N. A. ALBISTON (Melbourne) said that the basis of our life depended on the recognition of the family as the social unit. This was affected by such institutions as nursery schools, and there was a danger of the misapplication of principles. He hoped that

the family life would be assisted by the development of the scheme.

The CHAIRMAN commented on the points raised in view of his experiences as a general practitioner and as a medical adviser to a public school. He said that corporal punishment was occasionally necessary in the interests of school discipline, but that the punishment of girls in this way was very rare. The problem of nocturnal enuresis was very difficult; a developmental factor and possibly also some endocrine upset was at work. He agreed with other speakers that the child should be educated in sex matters by reference to human anatomy and physiology, and not by analogy. The real aspect of the life of the child was formed from the attitude of his parents.

Dr. SUTTON, in a brief response, emphasised that the real function of child guidance clinics was to assist the parents to maintain the integrity of the family unit and promote its harmony. The usurpation of parental function was never intended.

PANEL AND CONTRACT PRACTICE

The Cost of Vaccines

IT is sometimes alleged that insured persons receive a standard of treatment below that enjoyed by private patients, and this idea is one which insurance practitioners themselves can do most to dispel. Unfortunately many practitioners, unwittingly no doubt, foster the notion that anything out of the common is beyond the scope of medical benefit. And one of the most common causes of misunderstanding is the administration of injections—vaccines and the like. Sometimes the doctor, anxious to do the right thing, writes to the Insurance Committee something like this: "I have been advised to give a vaccine as a preventive against influenza. Could you please inform me if the vaccine can be obtained through the N.H.I.?" Of course it can and should be given to the patient if the doctor is of the opinion that it is necessary for the proper treatment of his patient.

But it is more unfortunate still when, having agreed to give a certain form of treatment, the doctor causes his patient to incur expense and does not take the trouble to ascertain whether the expense is justified. Here are the salient points of a recent case.

The patient had been suffering from recurrent boils which in spite of treatment with various medicines, local applications, &c., relapsed from time to time. The patient asked the doctor whether there was any other treatment which the doctor could give him, in response to which the practitioner referred to a recently introduced vaccine treatment for staphylococcal infections, saying that as he regarded the treatment as experimental, and not as requisite or necessary, he would not be prepared to issue an insurance prescription for the vaccine, but that if the patient cared to purchase it himself the doctor would apply it free of charge. The particular preparation used was one which could have been either ordered or supplied by the doctor, and the clerk of the committee when telling him so commented upon the doctor's excuse for failing to prescribe it from the point of view that in medical treatment much is of an experimental nature. It seemed to the clerk that, other remedies having been tried and found wanting, there was every justification for ordering the vaccine in this case even though the doctor was not certain that it would have a beneficial effect.

The weakness of the doctor's position in this case was accentuated by the fact that he himself "mentioned" the new treatment and was willing to apply it experimentally at the patient's expense. It would obviously be improper to debit insurance funds with the cost of experimental investigations in therapeutics (although the Medical Research Council's funds actually originated in this way), but to apply a recognised form of treatment experimentally in a particular case is a different proposition. The difficulty was overcome by the doctor authorising the refund to the insured person of the amount paid, and a corresponding debit against his account, but he is claiming the cost of the preparation from the committee, so no one will be the worse off, and one insured patient at any rate will know that insurance medical treatment is not restricted to what can be obtained in a bottle.

Adequate Prescribing

The annual report for 1934 of the chief medical officer of the Ministry of Health contains a paragraph about insurance prescribing, in which it is pointed out that the regulations impose no restriction on the discretion of a doctor in prescribing medicine for his insurance patients. That discretion, however, must obviously be exercised reasonably, and if on investigation it is found that a doctor's prescribing is causing unreasonable demand on the funds available, money may be withheld from his remuneration. Judgment of the question rests in any case not with the Minister, but with the doctor's professional colleagues on the local panel committee; the Minister has no power to set standards in this matter. The demands on the funds caused by the prescribing of insurance practitioners throughout the country as a whole continue to cause anxiety. The average expenditure for drugs per head of the insured population in 1934 (namely, 3*s*.) showed no appreciable decrease on that for the previous year. While a certain increased demand is to be expected from the extending use of costly, though necessary, modern methods of treatment it remains, as most observers believe, that a considerable proportion of the total outlay on drugs could be eliminated without detriment (possibly with advantage) to the proper treatment of the people. The report goes on to say that the wide variations in cost noted in the previous report, upon which we commented recently, remain with but little change, the average varying from 55·5 pence in Salford down to 22·6 in Oxford. It is gratifying to be able to state that during the year there was evidence that increasing interest in the question of the general high level of cost of prescribing is being taken by representatives of the profession themselves in various parts of the country. The C.M.O. points out that in a professional matter of this kind the well-directed efforts of representative members and bodies of the profession must prove incalculably more potent than any disciplinary action in individual cases which is open to the department.

The Regional Medical Service

Again it is found that insurance practitioners are averse from calling in the regional medical officer for consultation purposes. For decision as to incapacity the approved societies referred 499,885 cases and doctors 1366 cases, but for consultations the societies referred 2559 and insurance doctors only 82 cases. During the year the R.M.O.'s made 14,991 visits to insurance doctors in connexion with prescribing,

certification of incapacity, and the keeping (in some cases the non-keeping) of medical records.

Medical Records

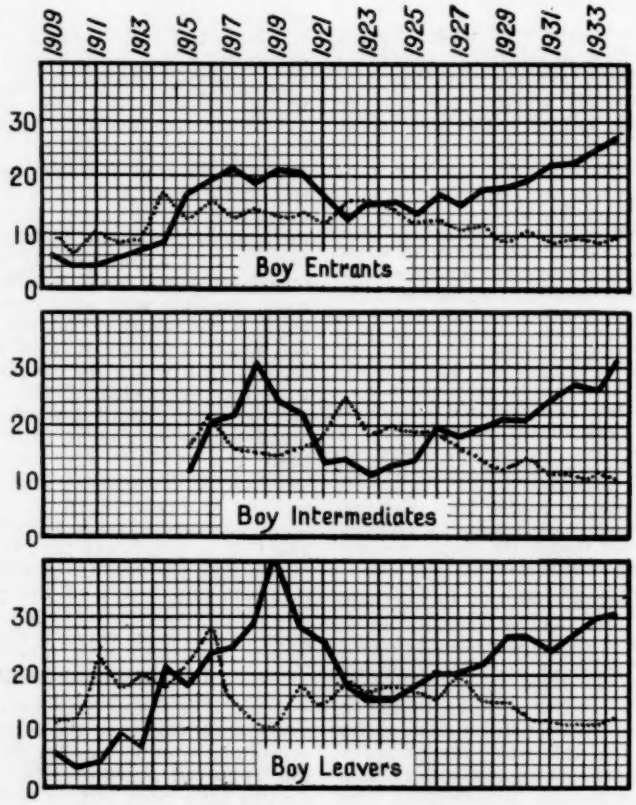
A practitioner writes: "In a recent Public Health note (THE LANCET, Sept. 28th, p. 740) occurs the sentence, 'Practitioners may still be heard to complain about the record keeping that the insurance medical system imposes upon them, yet when they were students they were taught, as clinical clerks, to note the salient facts of a case for future reference.' As an insurance G.P., may I say that it is not the clinical records we object to so much as the compulsory tick for each attendance and certificate, and the schoolmaster attitude of the inspecting R.M.O., with the threat of a fine if the ticks do not come up to so much per cent. Compulsory ticks should be forthwith abolished, and if the visiting R.M.O. must come round and inspect, let him stick to a survey of clinical records."

To be useful to doctor and patient, records should be consulted each time the patient is seen, and some note made to indicate progress. If it is generally found that the insertion of a mark in one of the columns provided entails any serious extra labour, something should be heard of it at the forthcoming Panel Conference on Nov. 14th. We understand that the Insurance Acts Committee have informed the Ministry of Health that after careful consideration they are convinced that, subject to certain minor alterations in the form of record, the present system of medical records should in all essentials be continued. But the committee have suggested that the profession, through their local committees, should coöperate with the department in measures for improving the clinical, as distinct from the administrative, value of the records where this is found defective. Consideration is being given to an appropriate procedure for carrying the suggestion into effect.

PUBLIC HEALTH

Records of Nutrition in School Life

THE request by the Board of Education that continuous records of nutrition should be kept on the lines followed in the county of Gloucester leads us to turn to Dr. J. Middleton Martin's report as county M.O.H. where his data and methods are explained. He speaks of estimating the "functioning of the body as a whole," and quotes Memo. No. 124 of the Board which begins: "The main issue is to estimate the general well-being of the child," and after giving examples of criteria ends with the remark: "It is the general impression which decides the issue." The Board suggest a grouping into (1) excellent, (2) normal, (3) slightly subnormal, (4) bad; the four groups in the Gloucestershire report probably denote similar grades. In either case the classification depends mainly on the personal impression formed by the examining doctors. Dr. Martin regards the average weight and height for age determined for his school-children in the years 1909–1918 as a serviceable check, but the relation of weight to age is hardly of much value as a standard of nutrition. He cites examples of wide discrepancies between observers, adding that in the first 12 years of the series there were ten changes in the medical staff, although for the last 14 years the personnel of four has been the same. In his view these individual variations are so blended in the mass of figures that the combined findings may fairly represent the nutritional trend in the county as a whole. Support for this view will be found in the fact that in all the different age and sex groups the changes have been similar, and that there is a close coincidence between the periods of rise in the "above average" group with a fall in the "below average" group. We reproduce here the three of Dr. Martin's graphs which concern boys. The numbers for each year are of course not large; the total routine medical inspections in the county in 1934 were less than 1300, compared with over 200,000 for London, and the effect of minor errors in the records is enhanced by their subdivision into six sections according to sex and age grouping. But the Gloucestershire records cover a period of 26 years, and Dr. Martin notes that the London figures for 1920–33 show a similar rise and fall. They are moreover fairly consistent in the various groups, and they do demonstrate



Nutrition of School-children in Gloucestershire.

Percentages (boys) above the average (continuous line) and below the average (dotted line).

that the general nutrition tended (1) to improve just before and during the war, (2) then to fall somewhat, and (3) to improve fairly regularly during the past 12 years.

These tendencies are in part confirmed by the records of other areas. They differ however from those of Dr. Friend in his recent work [1] on the nutrition of public schoolboys, the condition of whom was markedly worse during the war years. Naturally the effect of the war on the financial resources of the families of elementary and public school-children was not the same. The example of Gloucestershire might well be followed by other authorities which have not heretofore kept such records and can benefit by the experience already gained in the avoidance of possible sources of error.

New Public Health Legislation

Parliament is likely to be prorogued this week, which will mean the postponement of the big new Public Health Bill. This is the measure which will repeal and replace the existing legislation which goes back to 1875 (when both the central and the local authorities were different from those of to-day) and was greatly extended in 1907 and 1925. It will perform for public health the same admirable work as was done for local government when the consolidating Local Government Act was passed a few years ago. As on that occasion, it will doubtless be found that some new provisions must be enacted for the sake of symmetry and to remove uncertainties. It is to be hoped that members of Parliament will not wreck the chances of the Bill, which is primarily a redrafting Bill, by overloading it with amendments of their own. The committee which has produced the new draft was appointed by the Minister of Health in 1930. It has produced visible results more swiftly than that other body which the Chancellor of the Exchequer appointed several years earlier to consolidate the law of income-tax. When the Public Health and Local Government Consolidation Committee held a dinner to celebrate the completion of its work on the Local Government Bill, Lord Chelmsford was still its chairman. At his death Lord Addington, who has considerable experience of local government matters, was appointed to succeed him. Although the proposed new legislation means that medical officers of health and others will have to learn their way about a new code and probably to supply themselves with a new text-book, the general interest of all in public health will be stimulated and assisted by giving the citizen a single modern document in which the law may be found.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 12TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2839; diphtheria, 1218; enteric fever, 37; acute pneumonia (primary or influenzal), 530; puerperal fever, 46; puerperal pyrexia, 121; cerebro-spinal fever, 10; acute poliomyelitis, 14; acute polio-encephalitis, 2; encephalitis lethargica, 7; dysentery, 26; ophthalmia neonatorum, 95. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Oct. 18th was 2955, which included: Scarlet fever, 1035; diphtheria, 1156; measles, 36; whooping-cough, 293; puerperal fever, 17 mothers (plus 8 babies); encephalitis lethargica, 268; poliomyelitis, 15. At St. Margaret's Hospital there were 24 babies (plus 11 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 3 (0) from measles, 6 (1) from scarlet fever, 14 (3) from whooping-cough, 25 (7) from diphtheria, 41 (11) from diarrhœa and enteritis under two years, and 21 (5) from influenza. The figures in parentheses are those for London itself.

Southampton reported the only death from enteric fever. Liverpool and Birmingham had each 4 fatal cases of enteritis, no other great town more than 2. The deaths from measles occurred at Liverpool 2, Manchester 1.

The number of stillbirths notified during the week was 290 (corresponding to a rate of 44 per 1000 total births), including 44 in London.

[1] Friend, G. E.: The Schoolboy. Cambridge. 1935. See THE LANCET, 1935, i., 1394.

MEDICINE AND THE LAW

Suggested Road Traffic Courts

AT the Law Society's provincial meeting at Hastings last month a speaker advocated the creation of separate "road traffic courts" with civil and criminal jurisdiction. He thought that some 500 courts would be required, with a traffic judge and traffic registrar sitting concurrently in each—presumably on the lines of our existing county courts. The creation of such courts, he opined, might hasten the decrease of the coroner's court, a result which, in his opinion, would be a blessing to all.

There is no doubt that the High Court in London is at present heavily preoccupied with claims for damages in what are called "running-down cases" and that, if these could be tried elsewhere, much judicial time would be set free for other kinds of litigation. Not only would the arrears in the King's Bench Division vanish; the courts of summary jurisdiction also would be relieved of the thousands of summonses against motorists which the last volume of Criminal Statistics showed to be a great part of the magistrate's work. There seems, however, no need to belittle the services of the coroners' courts. Unlike other juries, the coroner's jury is allowed not only to reach its conclusions in the light of the evidence offered at the hearing, but also to bring to the case its own knowledge of local conditions and circumstances. It may well have some special contribution to make by recommending that a traffic crossing known to be dangerous shall be made more safe or that existing warnings or notices be improved. In any event the inquest system needs to be considered as a whole and not merely by reference to a fraction of its activities. It will be time enough to talk of ending the coroner's court when the departmental committee, now examining the practice and procedure at inquests, decides to advocate termination.

Psychiatry in Schools of Law

Are there any courses at English universities where law students may familiarise themselves with psychiatry? In America the University of Yale has instituted such a course long enough for it to be recognised part of the work of the Yale Law School. The medical faculty of the university has produced in Dr. Kahn a teacher who has specialised in criminology. He and Dr. Thompson, of the Department of Psychiatry in the School of Medicine, have coöperated with the teachers of law, and the police authorities send actual cases for clinical demonstration. There is a seminar study of various medico-legal problems raised

by abnormal personalities in both adult and juvenile delinquents. The students, it is believed, undertake research into the patients' environment and pedigree. It is realised of course that useful conclusions cannot be reached without prolonged observation and that two hours weekly cannot fully equip the student. Nevertheless, the group discussions, open to a limited number of law students with the consent of the instructors, will do something to acquaint future judges with the possibilities of a science which courts of law ought not to neglect. We have police magistrates in London who have recognised the value of psychiatry; others are inclined to be contemptuous. The Home Office has begun (as the annual reports of the Prison Commissioners have revealed) to make a tentative use of psychiatrists in selected cases of difficulty. It has not yet admitted the success of the experiment.

IRELAND

(FROM OUR OWN CORRESPONDENT)

A BELFAST HOSPITAL AND ITS TRADITIONS

IN an address delivered at the opening of the new session at the Royal Victoria Hospital, Belfast, Dr. Robert Marshall told something of the history of the hospital which the students had come to serve. In 1792, which marked its beginning, Belfast was a small town of 18,000 inhabitants, described as "unusually picturesque and beautiful—the pleasantest spot in the north of Ireland." In that year representative citizens appealed for funds to found a general dispensary for the sick poor. The first honorary staff consisted of two consulting physicians, two attending physicians, and two attending surgeons, and it was interesting to note that pending the election of Mr. Hull as apothecary at £40 a year, the surgeons were expected to dispense medicines for the physicians. This dispensary, the first of its kind in the city, had a troubled career until the year 1799, when a fresh start was made and three houses in Smithfield were rented, Dr. McDonnell and Mr. Fuller being appointed physician and surgeon respectively. The hospital steadily gained the appreciation of the public and in 1810 McDonnell and his colleagues obtained promise of a site of ground in Frederick Street. The first patients were admitted on August 1st, 1817, and in 1820 the admission of pupils was authorised; but it was not until 1882 that James Alexander Lindsay was appointed the first house physician. The speaker emphasised that this system of resident pupilship had been for over a century the distinctive feature of Irish medical teaching and advised the students to avail themselves of this opportunity, because it was the most important part of their course.

The year 1827 marked another stage in the history for it was in that year that Dr. McDonnell gave the first formal clinical lecture on the subject of systematic medicine. The need for a medical school was then keenly felt, but it was not until the autumn of 1835, exactly a hundred years ago, that this was opened in the Royal Belfast Academical Institution. The first professor of medicine, Dr. Henry MacCormac, was chiefly remembered because he was the first to insist on fresh air in the treatment of tuberculosis. He was a man of great erudition, conversant with 20 languages, and received a public testimonial to his work for the sick poor during the cholera epidemic of 1832.

Dr. Marshall then referred to the life and death in 1845 of Dr. McDonnell who must always be revered as the founder of the hospital. During his lifetime he had, largely by his own enthusiasm, erected the hospital and the medical school of which it was a part. In 1903 the present hospital was opened at a cost of £120,000. He also spoke of some of the great ones who were the teachers in the past: Sir William Whitla, Sir John Byers, Sir John Walton Browne, Dr. Lindsay, Dr. McQuitty, Dr. McKisack, Dr. McIlwaine, Mr. Robert Campbell, and Mr. Andrew Fullerton. He reminded them of the terms in which the hospital had been dedicated—"to the sick and to the art of medicine." The sick man came first and the art of medicine second.

Prof. R. J. Johnstone presided at the meeting and a vote of thanks was proposed by Mr. Hardy Greer and seconded by Dr. J. C. Rankin. In the course of his address Dr. Marshall referred to the appointment of Mr. T. S. Kirk as consulting surgeon, after years of devoted service, and said that Mr. H. P. Malcolm had been promoted surgeon and Mr. C. A. Calvert elected assistant surgeon. The board of management have made three notable achievements in the past years—namely, a new nurse's home and a pavilion for private patients, which were in the course of erection, and a superannuation scheme for the nursing staff.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

The annual meeting of the president and fellows of the Royal College of Physicians of Ireland was held in Dublin on the afternoon of St. Luke's Day. Dr. John Agar Matson was re-elected president of the College. The following were elected censors: in medicine, Drs. J. F. O'Donnell and E. T. Freeman; in midwifery, Dr. N. McI. Falkiner; in medical jurisprudence, Dr. P. T. O'Farrell. The annual dinner of the College was held on the evening of the following day, when 25 fellows and 65 guests dined together.

BELFAST POLICE SURGEON'S DEATH

Dr. P. E. O'Flaherty, who died on Oct. 14th after a short illness, was senior police surgeon in Belfast. Educated at St. Malachy's College he graduated in medicine through the old Royal University of Ireland and set up practice in Belfast. For some years he was a member of the clinical teaching staff of the Mater Infirmorum Hospital. Later he was appointed medical officer to H.M. Prison and the Royal Irish Constabulary in which offices he had over 20 years' service. Dr. O'Flaherty was popular among his professional brethren and the general public and his loss will be deeply regretted.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

CHANGES AND CULTS

THE 199th session of the Royal Medical Society opened last week when Sir Walter Langdon-Brown delivered an address on Changing Conceptions of Disease. Dr. J. L. Henderson, senior president of the society, was in the chair. Sir Walter began by recalling his first visit to Edinburgh as a student 45 years ago, and paid a graceful tribute to the Scottish capital in respect to both literature and medicine. He proceeded to remind his audience of the debt medicine owes to the genius of the Greeks. The development of medical knowledge might be compared to a spiral, which though tending to ascend

has frequent opportunities of looking back at knowledge which was gained long ago and has since been forgotten. It is often found that discredited views have much to be said in their favour, and while some might describe this as the swing of a pendulum, the analogy of the spiral is more correct. The lecturer then described the changes caused in medicine by the development of biochemistry which has done much to bring to light the deficiency diseases. He emphasised the danger of the medical profession forming ill-considered conclusions, and illustrated this danger by speaking of the changing views of visceroptosis during his own lifetime. The medical profession, he said, is apt to develop cults, such as that which considers excess of uric acid in the blood to be a cause of many ills. This cult had developed to such an extent that he had heard a physician express the belief that a man never completely gets over the effects of eating a rump steak. Uric acid was now known to have little or no poisonous effect on the body. The importance of psychological disturbances in causation of many forms of disease, especially those affecting the alimentary system, had been one of the most important advances of post-war medicine.

Sir Walter was given an enthusiastic vote of thanks, proposed by Prof. W. T. Ritchie and seconded by Dr. K. M. Morris. The session could scarcely have had a more interesting or entertaining beginning.

CORRESPONDENCE

COUGH AND HUMIDITY

To the Editor of THE LANCET

SIR,—In a London infirmary, where I treated consumptives for many years, I was much struck by the variations in the amount of coughing heard in the ward and by the marked influence of changes of weather. It has been said that in phthisis every cough is a tragedy, and it should certainly be the aim of the physician to stop all useless coughing if he can.

In designing wards for the treatment of consumption very little attention is directed towards the production of a suitable degree of humidity, though the ward temperatures are charted with solemn regularity. I have noticed that cold dry nights in the winter are often more troublesome as far as coughing is concerned than "muggy" nights, even if the latter contain their quota of fog. I imagine that the explanation is somewhat as follows. Cold air, entering by the windows, has a low moisture content. In passing over the radiators it is heated many degrees but its water content remains the same. By reason of the rise in its temperature the air has now a much greater drying power so that when inhaled it dries and irritates the throat and air passages. By using wet and dry bulb thermometers I collected figures illustrating this point, coughs in a ward of 28 beds being recorded by a nurse over half-hour periods, when it was evident that there was more coughing when the air in the ward was many degrees warmer than the outside air.

It therefore seems desirable that, when these conditions obtain, the humidity of the air should be increased artificially to a degree most suitable for patients. It is not desirable to produce "muggy" air, for this is known to be harmful to consumptives. Masten states that for most tuberculous cases the temperature range should be between 38° and 68° F. with a humidity not exceeding 50 per cent.

I am, Sir, yours faithfully,

Buxton, Oct. 15th. G. C. PETHER.

INVERSION OF THE UTERUS

To the Editor of THE LANCET

SIR,—Mr. James Cook's note in your last issue (p. 884) on complete inversion of the uterus leads me to report the following case which I saw on August 19th, 1934.

A primipara, aged 24 years, had had an easy low forceps delivery. Her own doctor and a qualified midwife were in attendance. About ten minutes after the infant was born the mother had a violent pain, and the uterus with the placenta attached was expelled. I saw the patient half an hour after this occurrence. There was definitely no history of traction on the cord after delivery of the child, nor, as the cord was of normal length, was it likely that traction had been exerted on it, between the pains, during the forceps delivery, and as the fundus had not been manipulated, it was apparently a case of spontaneous inversion of the uterus.

The patient was profoundly shocked, the pulse being hardly perceptible and impossible to count. There was very little hæmorrhage; 1 c.cm. of Coramine was immediately given, together with the usual treatment for shock. The placenta was then detached from the surface of the uterus which was immediately well washed with Dettol solution.

The uterus was easily replaced without an anæsthetic, 1 c.cm. of pituitrin given, and an iodine douche administered. The uterus was then well contracted. On the second day the temperature rose to 100° F. and remained at this level, with variations of half a degree for seven days. Antistreptococcal serum and dettol douches were given, and an uneventful recovery was made.

This case supports Mr. Cook's suggestion that early reduction of the inversion is important. The confinement took place in the patient's house, and removal to hospital would have necessitated a journey of six miles, with consequent delay in treatment and possible disaster to the patient. As the amount of hæmorrhage is generally said to depend on whether the placenta is separated or not, it was interesting to note that the removal of the placenta did not materially increase the hæmorrhage.

I am, Sir, yours faithfully,

Stourbridge, Oct. 18th. C. J. CHESTERFIELD COOKE.

URINARY FISTULA FOLLOWING APPENDICECTOMY

To the Editor of THE LANCET

SIR,—Since apparently very few instances of urinary fistula following appendicectomy have been recorded the following case may be of interest to surgeons.

A very fat woman, aged 45, was operated upon for acute appendicitis, the abdomen being opened by a lower right paramedian incision, and a perforated gangrenous retrocæcal appendix removed. A length of corrugated rubber dam was left draining the pouch of Douglas and was brought out of the abdominal wound at its lower extremity. The patient was nursed in the high Fowler position. On the fifth day following the operation the dressings were reported to have an ammoniacal smell. It was suggested that the ureter or the bladder had been injured during the operation or that the pressure of the drain had caused a portion of the bladder wall to slough. There remained, however, the onus of proof

that the suspected fluid was in fact urine. The flow was not great enough to enable any to be collected for examination, so indigo-carmine was injected intravenously and shortly afterwards the dressings at the lower angle of the wound were seen to be stained blue. The patient died of general peritonitis. At autopsy the whole intestinal tract was grossly distended. There was no free fluid in the general peritoneal cavity and no intraperitoneal staining. A probe passed into the bladder emerged at the lower end of the wound and on further dissection a patent urachus extending up to the wound was displayed. It is believed that the explanation of the fistula is as follows: either the patent tract was punctured by a needle in picking up the inner leaf of peritoneum while closing this layer, or possibly the tube may have caused necrosis by pressure, in support of which is the observation that the urine did not begin to escape until the fifth day after the operation.

This latter observation raises the question of the best site of emergence of drainage-tube or dam in cases of incisions below the umbilicus whenever drainage has yet to be employed. As far as I can ascertain most surgeons bring the drain out through the lower angle of the wound; but it was pointed out to me by Mr. Frankau that this was bad practice, for the following reason. It is generally agreed that the point of emergence of a drain may leave a weak spot, and this cannot be satisfactorily controlled by any form of belt if it is at the lower end of an incision in this region; whereas, at the upper (umbilical end) a belt can readily be fitted. Two lesser advantages may possibly also be claimed for bringing the drain out of the upper end of incisions made below the umbilicus, but I do not wish to give them the same emphasis: (1) if draining through Battle's pararectal incision there is less likelihood of a secondary hæmorrhage from pressure on the deep epigastric vessels, and (2) if corrugated dam is used it will separate omentum and intestine from the back of the peritoneal suture line as it lies in the length of the wound, and so perhaps diminish the chance of adhesion formation.

I am, Sir, yours faithfully,

VICTOR RIDDELL,

Surgical Chief Assistant, St. George's Hospital, S.W.

Oct. 22nd.

A PECULIAR BODILY DISPROPORTION

To the Editor of THE LANCET

SIR,—The significance of external physical characters has received relatively little consideration, except where gross disproportion, amounting to deformity, is present. And I should not have asked you to give space to this preliminary communication on the subject if a question put to me by H.M. coroner for the metropolitan district of Essex had not caused the lay press to call attention to the subject. A series of measurements on a post-mortem population of about 500 bodies has, I think, revealed a peculiar correlation between the "trunk-leg ratio" and certain other abnormalities.

In 17 cases the leg-length, measured from the top of the great trochanter to the heel, was greater than the trunk length, measured from the top of the great trochanter to the vertex. In all these persons I found that—

1. The aorta was strikingly narrow;

2. The thymus gland was present, and varied in weight from ¼ oz. to 1¼ oz.;

3. The spleen was rather large, and the Malpighian bodies were strikingly prominent;

4. The mesenteric glands were unusually large and numerous.

Two of the cases were sudden deaths under anæsthesia, and the other 15 were suicides. Now, these 15 cases represent 75 per cent. of the total cases of poisoning in the age-groups 14 to 35 in my whole post-mortem population. It seems clear, therefore, that, either 75 per cent. of the population of this country in this age-group possesses these characteristics, or that persons of this type have such mental characters as may lead to suicide. But I possess records of 101 bodies between the ages of 14 and 35 in which death was not due to suicide or anæsthesia; and only 4 of these showed the external and internal peculiarities to which I am calling attention. This small number of persons showing such characters in the second group does suggest that the first group consists of abnormal persons.

Later I hope to present the findings in detail, but the thesis I wish to defend here is that persons with leg-length more than 50 per cent. of the total body-length are liable to sudden death under anæsthesia and, further, that persons of this type are potentially suicidal. It also appears to be justifiable to state that persons with this external peculiarity will be found to possess an excess of lymphatic tissue. A striking manifestation of this excess is the presence of thymic tissue at an age when it would normally have disappeared (after the age of 14 years).

It seems to me possible that some anæsthetic deaths would be avoided if measurements were taken before anæsthesia were started. It would also be valuable to know whether this peculiar bodily disproportion is commoner among the inmates of mental hospitals than in the general population.

I am, Sir, yours faithfully,

Park-square West, N.W., Oct. 17th. A. PINEY.

ATTITUDE OF SURGERY TO HÆMATEMESIS

To the Editor of THE LANCET

SIR,—I am flattered that any words penned by me should attract the attention of such a distinguished and erudite physician as Dr. Letheby Tidy; furthermore, I rejoice to find that his peroration coincides almost verbatim with one of the opening paragraphs in the address published by me in THE LANCET of Oct. 12th, and that he too urges "the treatment of each case individually, with an open mind, and with the coöperation of medical and surgical acumen." This indeed is the very burden of my paper, a closer liaison between physician and surgeon in these difficult cases. I trust that the weight of Dr. Tidy's authority may promote that coöperation and consultation that we both desire.

A second glance at my paper should demonstrate to Dr. Tidy that the indications for surgical interference are clearly and fully set out therein; he will also find figures of my own, should he care to read. Of personal cases of hæmatemesis which have been admitted straight into my own wards or into private institutions I find that in point of fact I operate upon little more than one-third; difficulties in diagnosis, the general condition of the patient, and all that constitutes surgical judgment seem to deter me from interfering in a higher percentage; nevertheless, this small figure may not constitute the ideal. If Dr. Tidy will explore the possibilities of the blood-drip and early operation in the *hæmorrhages of chronic ulcer*, and if he will summon surgical aid in the first 24 hours, he will find anxieties slip off his shoulders.

There is, however, one further paragraph in his letter that cogently demands an answer, for he writes :

"Such a statement is manifestly absurd, and a study of Finsterer's original article gives the impression of the same exaggeration throughout. Neither his statements nor his statistics can be safely accepted nor deductions drawn from them."

Those who know their Herodotus and who recall the description given by the historian of Halicarnassus regarding certain pristine customs of an ancient people, will regret with me that a censor of the Royal College of Physicians should metaphorically resort to similar practices in his references to Prof. Hans Finsterer. Bonds of a long and intimate friendship with the Austrian professor compel me to protest indignantly against the charge of unreliability levelled against the distinguished surgeon—a surgeon of international repute, whom doubtless Dr. Tidy knows not, and almost certainly has never seen at work.

Surgeons all over the world are nowadays a band of brothers ; the numerous surgical travelling clubs of this land which are constantly visiting continental clinics have done much to consolidate that spirit of fraternity. In the name of British surgery and especially in the name of the many British surgeons who have journeyed to Vienna, who have spent time with the professor, and who have seen this kindly, honest surgeon at work, I deprecate these reflexions on the value of his statements and figures.

I am, Sir, yours faithfully,

Harley-street, W., Oct. 21st. G. GORDON-TAYLOR.

To the Editor of THE LANCET

SIR,—I do not wish to enter into the discussion on the attitude of surgery to hæmatemesis, but I was astonished to read the attack of Dr. Tidy on Prof. Finsterer, his statistics and conclusions therefrom. It is extraordinary that in a discussion like this Dr. Tidy (who obviously does not know Finsterer or his work) should dismiss the work of one who to those who know him professionally and personally is not only a great worker in the cause of progress in gastric surgery, but is also the very soul of honour as regards the truth of his statistics.

As one who has known Finsterer for many years and has visited and worked with him frequently may I assure Dr. Tidy that Finsterer's statistics can be safely accepted and that in his hands and with his methods the operation gives the results he claims. I have discussed this hæmatemesis question with him on several occasions and have seen some of his cases and the results I have seen bear out the statistics.

I am, Sir, yours faithfully,

Nottingham, Oct. 21st. W. F. NEIL.

To the Editor of THE LANCET

SIR,—I, in common with many of my friends and colleagues, have enjoyed the hospitality of Prof. Finsterer in Vienna. He has with me, as with many other visitors, willingly shared his experience and demonstrated beyond any doubt the safety and certainty of his technique. We went in doubt, we saw with appreciation, and the conviction which naturally followed was real enough profoundly to modify our own technique. It is therefore impossible to allow the comments on Prof. Finsterer's fundamental honesty, made by so distinguished a physician as Dr. Letheby Tidy, to pass without protest. My concern is, I am sure, shared by many others whose experience has been similar to mine.

I am, Sir, yours faithfully,

HENRY W. S. WRIGHT.

Weymouth-street, W., Oct. 21st.

To the Editor of THE LANCET

SIR,—Anyone who has been fortunate enough to see Prof. Hans Finsterer treating a case of severe hæmatemesis by "immediate operation" would scarcely be inclined to endorse the attitude that Dr. Letheby Tidy adopted in his letter to your journal last week. We are all aware that the interpretation of medical and surgical statistics is open to some criticism, but I would be very hesitant to agree with the suggestion that neither the statements nor statistics of this celebrated surgeon can be safely accepted. Those patients of Prof. Finsterer's that I have seen in this connexion were ample testimony to his teaching. As little delay as possible, a most meticulously careful operation under local anæsthesia, and avoidance of traction on bowel and mesentery were the principal lessons that I brought away with me.

I am, Sir, yours faithfully,

Harley-street, W., Oct. 21st. T. HOLMES SELLORS.

To the Editor of THE LANCET

SIR,—Dr. Tidy's letter prompts me to offer a comment on Mr. Gordon-Taylor's indications for surgery in hæmatemesis—those given in the body of his paper as distinct from his peroration. I agree that the drip method of giving a large blood transfusion promises to make the treatment of "severe" hæmatemesis a more straightforward and less anxious matter than it has been. Let every severe case be so transfused at once ; and let every case (cirrhosis excepted) in which pulse-rate, clinical condition, and hæmoglobin estimations indicate the persistence of copious bleeding be operated on while the transfusion continues. The results of following that working rule will teach us more than any further elaboration of old statistics, such as Dr. Tidy asks for.

I should not assume out of hand, however, that drip transfusion will make all gastric operations on the recently exsanguinated equally safe. Where I ask the surgeon to intervene I should still beg him to stay the bleeding with the minimum procedure—e.g., the ligation of arteries rather than resection of the stomach. The latter, if indicated, can usually wait for a few weeks. So also can most of the operations (for large or adherent or long-standing ulceration, for hour-glass stomach, &c.) listed under Mr. Gordon-Taylor's number 4. These operations will often be gastrectomies, and although the large drip transfusion may restore the patient's hæmoglobin to normal within 48 hours after his hæmatemesis, it does not follow that the patient himself is then in the best condition to undergo a gastrectomy. Rest and suitable feeding may well improve him further and so reduce the surgical risk. There is a danger that the new transfusion method may be discredited if too much is asked of it.

I am, Sir, yours faithfully,

R. S. AITKEN.

British Postgraduate Medical School, Oct. 21st.

PRINCESS MARGARET ROSE HOSPITAL FOR CRIPPLED CHILDREN, EDINBURGH.—Plans for the erection of a new ward at this hospital have been passed at the Dean of Guild court. The ward will cost £5500 and will accommodate 25 children, thus bringing the capacity of the institution up to 100.

THE HEALTH RESORT AS NATIONAL ASSET

A CONFERENCE IN BRUSSELS

SOME striking observations on the social and economic aspects of watering-places were made by Prof. RENÉ WYBAUW in a presidential address to the International Society of Medical Hydrology which held its annual meeting in Brussels from Oct. 12th to 17th. In these days, he said, it is the economic argument that appeals to governments and public bodies, and he recalled an investigation he had made in 1912 to discover the effect of additional publicity on a health resort. He had been astonished to find that when the town of Spa and its establishments increased their receipts by 29,000 gold francs the gain to the State (through railways, post office, &c.) amounted to 265,000 francs. Similar investigations at Ostend confirmed this conclusion —namely, that the State received ten times as much as the spa which spent the money. Post-war experiments at Spa produced the staggering information that this little town, receiving nothing from the State in exchange, simply by the intelligent use of its natural waters, brought to the Belgian Government an income of 12 million francs, not to mention 3 million in taxes on games. This calculation could be repeated for all the spas of the world. In certain countries indeed the governments had acquired the spas for themselves. Thus the most beautiful spa in the west of Europe, Vichy, belonged to the French Government, which administered it through a powerful company; Aix-les-Bains had just been endowed with a splendid establishment; Nauheim belonged to Hesse, and Kissingen and Reichenhall to Bavaria, and these have had magnificent establishments constructed for them by the Government. In Poland, Czechoslovakia, and Yugoslavia similar examples were to be found; in Italy the luxurious Salsomaggiore belonged to the State, and even in the little country of Luxembourg Mondorf was State-owned. In other countries taxes were instituted which covered publicity; elsewhere, again, important reductions were given on the railways to all travellers to the spas. In short, the "thermal industry" was everywhere encouraged on account of the large receipts which it brought to the State. Except, however, in certain countries where the governments were actual proprietors, there was a conspicuous disproportion between any sacrifice made by the State for the spas and the enormous receipts received by it through those spas. In Belgium just before the war the Government was much interested in Spa, formed a commission to study its needs, and took upon itself the expense of necessary new work at the establishments. After the war the broken establishments were put in order by the Government. But the anomaly remains, that the State now receives twelve times more in receipts through this spa than those who pay the costs of upkeep, and that it takes no regular share in the necessary expenses, although a new sympathy and understanding is happily gradually emerging.

On the medical and philanthropic sides, said Prof. Wybauw, diseases which pharmacological remedies cannot touch, such as rheumatism and circulatory troubles, are now being successfully treated at the spas. Unfortunately the expense is great, and in many countries, such as France, Germany, Switzerland, and England, an effort is being made to make the spas accessible to the purses of all citizens. The height of "thermal organisation" is in Soviet Russia, where these cures are obligatory and where sickness insurance includes treatment at the spas as one of the most important elements of public health. Nowadays such charges cannot be imposed on the localities, and the State should undertake and organise the thermal treatment of the poor. The problems are vast, and the nations have need of the coöperation, the skill, and the research of their hydrologists. The situation also has its dangers. The mixture of purely scientific with economic interests sometimes raises issues between different nations in which the high purpose of scientific research is imperilled. In spite of the national egoisms of the present age, he trusted that the members of the society, in addition to searching after knowledge, would always cultivate a wide spirit of humanity and develop all those things which unite men of goodwill.

In welcoming the society to Brussels on behalf of the Minister of the Interior and of Hygiene, Dr. TIMBAL said that countries which realised the importance of their medicinal springs and made the necessary sacrifices for their development created thereby a factor of great importance in national prosperity. The valuable methods used must not be reserved for a privileged class. On behalf of the University of Brussels Prof. HÉGER-GILBERT, its administrator, welcomed the society as a body which was labouring to detach from empiricism a branch of medicine particularly fruitful in therapeutic results.

OTHER SUBJECTS DISCUSSED

The reports and discussions of the conference covered an unusually wide ground.

Dr. W. G. WILLOUGHBY (Eastbourne) in a paper on Marine Therapy described a novel method for continuous readings of relative humidity, showing that the proportion might vary in one day from 20 per cent. to 80 per cent. He said that inquiries from convalescent homes for children go to show that "seaside conditions" have a specific effect on catarrhal affections and cervical gland enlargements.

Several papers dealt with Carbo-gaseous Baths. Drs. GUILLEAUME and MARCEL WYBAUW (Spa) contributed a physiological and clinical study with extensive recent bibliography. Dr. WACHTER (Nauheim) emphasised the increased circulation and capillary activity, apparently due to the formation of a histamine-like substance in the skin; and Dr. DESCHAMPS (Royat) dwelt on the disappearance of arterial spasm and the cumulative and persistent effects of such baths on the circulation.

In a discussion on the therapeutic action of Peloids (semi-solid bath media) the veteran Prof. SCHERBAKOV (Belgrade) described and illustrated the formation of the Russian *limans*, the composition of the muds and their irritant action on the skin. Diluted mud baths and packs (médaillons) are much used in the Soviet Republics for the painful maladies "which transform the workers into invalids," and so contribute to the solution of a serious social problem. Prof. PISANI (Montecatini) distinguished volcanic peloids (*fangi*) as stimulant, solvent, or sedative, each having its own indications, and described recent research work in Italy. Dr. LENOCH (Prague) discoursed on the peats first used medically in Czechoslovakia just a hundred years ago. Dr. W. BENADE said that peloids were now examined at the Geological Institute at Berlin, especially in regard to their organic contents and reaction, varying from 0·1 to 9·0 pH, as well as their plasticity, water-holding capacity, thermal conductivity, and retentivity, and the amount of heat which can be transferred to the body in the peloid bath or pack.

At the general meeting of members resolutions were passed on the subject of Medical Ethics for Spa Practitioners, as recommended in the society's

journal, the *Archives of Medical Hydrology*, last July. The report of the standard measurements committee, presented by Mr. JUDD LEWIS, D.Sc., was received and the name "peloids" adopted, defined, and divided into a fourfold "fundamental classification."

After visits to Spa and Luxembourg the meetings concluded with a luncheon and discussion at the Palais des Thermes at Ostend.

LONDON MEDICAL EXHIBITION

THIS exhibition was opened on Monday and will remain open until 6.30 P.M. on Friday. Over 150 exhibitors took part and the stands were attractively displayed. A brief notice of some of the many products on view is given below.

Drugs and Pharmaceutical Preparations

(90) ALLEN AND HANBURYS LTD. (Bethnal Green, E.), in addition to their wide range of standard products, introduced a number of new preparations, including Calcydic, granules containing dicalcium phosphate, vitamin D, and glucose in a chocolate-flavoured base; Alkagen Glucose granules containing magnesium hydroxide with glucose and oil of peppermint; Proctocaine, a local anæsthetic; and Tannic Acid Jelly for burns.—(61) THE ANGIER CHEMICAL CO., LTD. (86, Clerkenwell-road, E.C.), showed their familiar emulsion, and emphasised the value of their Sagradol laxative emulsion containing mineral oil and cascara perfectly blended.—(116) THE ANGLO-FRENCH DRUG CO., LTD. (11 and 12, Guilford-street, W.C.), showed a number of pharmaceutical preparations, new and old, also the products of Modern Pharmacals Ltd. (12, Guilford-street, W.C.), and especially noted Phospho-Soda (Fleet), a non-toxic, highly concentrated aqueous solution of the primary sodium phosphate, free from syrup, glycerin, or oil; it can be used to correct hyperacidity and constipation and promotes the general functions of the liver and intestinal muscles.—(19) ANTIBODY PRODUCTS LIMITED (Watford, Herts) had on view a new preparation, British Grass Pollen, for the desensitisation treatment of hay-fever and British Bee Venom for rheumatism which, they recommend, should be used in conjunction with Antibacsyn for rheumatoid arthritis.—(7) ARMOUR AND COMPANY, LTD. (Armour House, St. Martin's-le-Grand, E.C.), showed their range of well-known gland preparations, including liver extract and pituitary posterior lobe ampoules.—(44) BAYER PRODUCTS LTD. (Africa House, Kingsway, W.C.) selected for mention a new vitamin-C preparation, Cantan, used for infant anæmia as well as scurvy; Bioferol, a new nutrient tonic of hæmoglobin, iron, and liver, for children and convalescents; and Festan, a stable preparation of pancreatic enzymes in dragées coated with an acid-resistant substance, for the treatment of intestinal affections and to free the intestine of gas before X ray investigation.—(5) BENGUE AND CO., LTD. (24, Fitzroy-street, W.1), stressed Cytobiase, an extract of fresh cod liver in a glycerin base; Iodeopirine, a non-toxic iodine preparation combined with acetylsalicylic acid with an activity 20 times greater than that of the acetylsalicylates; and Noseptyl, a mixture of ephedrine, menthol, and pine maritime in a paraffin base.—(87) BISODOL LTD. and ANADIN LTD. (12, Chenies-street, W.C.) showed their well-known products for indigestion and headache.

(37) BOOTS PURE DRUG CO., LTD. (Nottingham), in addition to their familiar Novostab, Stabilarsan, and Sulphostab, reminded visitors of their Hepastab, a liver extract for intramuscular injection, and their Insulin (Boots), accurately standardised and sterilised; and introduced Sodium Mandelate (Boots) for the treatment of urinary infections without preliminary neutralisation.—(122) BRITISH COD-LIVER OIL PRODUCERS (HULL) LTD. (St. Andrew's Dock, Hull) emphasised the guaranteed quality and potency of their product and showed visitors photographs illustrating the care which is taken to maintain perfect hygiene throughout the preparation, from the trawler to the bottle.—(140) BRITISH DRUG HOUSES LTD. (Graham-street, City-road, N.) showed their sex hormone preparations, notably Œstroform, Œstroform "B," and Progestin B.D.H. and the new Gonan, an exceptionally pure standardised preparation of the gonadotropic hormone from the urine of pregnancy; Ergometrine, a quickly acting water-soluble alkaloid of ergot; the Mandelic Acid B.D.H. Outfit designed to facilitate the use of the drug in urinary infections; and various vitamin products.—(144) BURROUGHS WELLCOME AND CO. (Snow Hill-buildings, E.C.) had an illuminated stand where visitors might examine for themselves crystals of their 100 per cent. pure Insulin and Digoxin, the stable preparation of digitalis; they also showed a new product Ergometrine and their Tarrafax Brand Tannic Acid Jelly, Kepler cod-liver oil, and serological products.

(1) G. W. CARNRICK CO. (Brooks and Warburton Ltd., 232, Vauxhall Bridge-road, S.W.) exhibited their well-known glandular preparations Hormotone, Incretone, and Thelestrin, and introduced Pitantrin, an anterior pituitary-like hormone.—(165) THOS. CHRISTY AND CO., LTD. (4/12, Old Swan-lane, E.C.), had on show a range of products, including Musterole Brand magnesia oil and mustard ointment; Estivin for hay-fever; Glycothymoline; and Lysoform disinfectant.—(13, 14) COATES AND COOPER LTD. (94, Clerkenwell-road, E.C.1), distributors for TEMMLER CHEMICAL WORKS, THE BIO-CHEMICAL LABORATORIES LTD., GOMENOL LABORATORIES, DESITIN WORKS, AMERICAN APOTHECARIES CO., CHEMICAL WORKS H. MACK NACHF., DR. JOACHIM WIERNIK & CO., A.G., DR. THILO & CO., MÜNCHEN CHEMICAL WORKS, and RUSSI & CO., in addition to the well-known products of these firms, introduced a new preparation of their own, Cerocol (colloidal cerium oxalate) for sea-sickness and air-sickness; and a new preparation by Russi and Co., Salepsi, intended to combine the sedative and hypnotic action of ethylphenylbarbituric acid with the antispasmodic action of valerian, the antivagal and hypocrinic action of stramonium and of scopola, and the laxative effects of cascara sagrada; Mack's "Forapin" Bee Venom Salve for rheumatism; and the Ivago Brand Antipyorrhœa Vaccine.—(3) CONTINENTAL LABORATORIES LTD. (30, Marsham-street, S.W.1), in addition to their Taxol, showed Crinex, a non-albuminous alcoholic preparation made from the follicular secretion of the ovary; and Antipeol, a vaccine filtrate containing the antivirus for staphylococcus, streptococcus, and pyocyaneus.—(117, 118, 138) CROOKES LABORATORIES (Park Royal, N.W.10) picked out from their colloidal preparations Halycalcyne, useful for emotional disturbances at the period and the menopause; Estoform, the new orthoformic preparation containing 50 per cent. alcohol for asthma and spasmodic cough; Mercury Sulphide for syphilis and psoriasis; Colsul aqueous, originally recommended for artificial pyrexia in general paralysis but now found useful in epilepsy also; a new range of transfusion solutions for giving large quantities of liquid intravenously, and a new preparation of aspirin, Collopyrin, put up in phials from which the label can be torn when they are given to a patient and which is marketed only to doctors.

(97) J. C. ENO LTD. (Pomeroy-street, S.E.) showed their well-known fruit salt.—(149, 150, 160) EVANS SONS LESCHER AND WEBB LTD. (56, Hanover-street, Liverpool) had a display of chemicals from which they selected for mention Colliron, colloidal iron containing 10 per cent. of iron and a minute trace of copper for massive iron therapy: diphtheria prophylactics in single and multiple doses; antitoxins of all kinds, and Hepatex I-M, solution of the liver fraction suitable for intramuscular injection, non-toxic and non-depressant.—(70) FASSETT AND

JOHNSON, LTD. (86, Clerkenwell-road, E.C.), drew attention to Ovoferrin brand colloidal iron tonic; Zomite brand chloramine pessaries, a convenient non-greasy contraceptive and antiseptic; Burson Lastex yarn stockings; and the Seabury and Johnson series of dressings and plasters; and mentioned that Argyrol is now put up in tablets without a binder.—(10, 11) GENATOSAN LTD. (Loughborough), in addition to their well-known Sanatogen, Genasprin, Formamint, and detoxicated vaccines, had a new series of preparations called the Fissan Brand Products, incorporating an improved physical method of applying medicaments to the skin, in the form of powders, pastes, and lotion, and also anal ointment and suppositories.

(95, 96, 109) GLAXO LABORATORIES (56, Osnaburgh-street, N.W.) showed their popular food and vitamin products, and introduced Dissolved Vaccines, G.L., an entirely new vaccine preparation; it dissolves the bacteria and renders their products non-toxic without in any way impairing their capacity to produce antibodies.—(121) C. J. HEWLETT AND SON, LTD. (35/42, Charlotte-street, E.C.), had a number of original preparations on view, notably their Antiseptic Cream for eczema and abrasions; Coneuro, a nerve tonic; Heptagen, an aperient and cholagogue; Mist. Pepsinæ Co. c. Bismutho; Tannic Acid Jelly for burns; Fornalgar, a mouthwash and gargle; and Evapogens, a series of medicated skin lotions containing spirit.—(71) HOFFMANN-LA ROCHE CHEMICAL WORKS LTD. (51, Bowes-road, N.), in addition to Imadyl brand histamine, Prostigmin, a peristaltic stimulant, also useful for relief of myasthenia gravis, and other well-known products, showed Larostidin, a histidine preparation for peptic ulceration; and Redoxon, synthetic vitamin C.

(86) HOUGH, HOSEASON AND CO., LTD. (2, Bridge-street, Manchester), had a range of products, including Tab. Arthritone for rheumatoid arthritis, and Tab. Eclectol Co., a combination of alkaloids having a katalytic action on hormonic activity; and Formic glycerophosphates.—(45) HOWARDS AND SONS, LTD. (Ilford), showed their wide range of pure chemicals, especially stressing Quinisan, quinine bisalicylosalicylate for colds and influenza; their anæsthetic ether, carefully tested and purified; and had an exhibit showing the difference between the different densities of bismuth carbonate and the advantages of a light form for certain purposes.—(63) JOHNSON AND SONS (Hendon, N.W.) showed Estersal, a mixture of the ethyl and propyl esters of salicyl glycollic acid for the relief of rheumatic affections.—(166) KAYLENE LTD. (Waterloo-road, N.W.) had on view their preparations of colloidal kaolin, Kaylene-ol, Carbokaylene, and Kaylene Opaque Meal.—(119) LACTÉOL DU DR. BOUCARD (30, Rue Singer, Paris) showed their many preparations of lactic ferments, and Viatol, a vitamin tablet.—(29) WM. MARTINDALE (12, New Cavendish-street, W.) pointed out Calvitone, an assimilable calcium vitamin tonic with a cod-liver oil equivalent of 33 per cent.; and Sterules Iodo-Ray, a radiographic medium for pyelography and urography, a halogen derivative of hippuric acid in aqueous solution containing also dextrose to minimise the loss by solution into the tissues.

(148) MENLEY AND JAMES LTD. (64, Hatton-garden, E.C.), in addition to their Iodex, had two new preparations: Calsiod for rheumatic and arthritic conditions; and Benzedrine inhaler, exhibiting greater potency than Ephedrine without irritation.—(103) H. R. NAPP LTD. (3 and 4, Clement's Inn, W.C.), among their many preparations, introduced Sedonan, a 5 per cent. solution of phenyldimethyl, pyrazolon, and anhydrous glycerin for the relief of inflammatory conditions in the ear; Ferro-Hepamult, a liver product in sugar-coated granules for anæmia; and Hepamult, their standardised liver extract, cheaper to use than fresh liver.—(120) OPPENHEIMER SON AND CO., LTD. (Handforth Laboratories, Clapham-road, S.W.), showed their Palatinoid and Bi Palatinoid products and various Alphidine compounds including the latest, Alphidine with guaiacum resin and sulphur precipitation, for rheumatic conditions.—(80) ORGANON LABORATORIES (1, Gordon-square, W.C.) had on view their Pregnyl, a gonadotropic hormone of pregnancy in a form which retains full activity over long periods; Menformon (Ketohydroxyœstrin) in oily and aqueous solutions and vaginal suppositories; and Pernaemon Forte, a protein-free cod-liver extract of controlled hæmopoietic activity.—(73) OXO LTD. (Thames House, Queen-street-place, E.C.), in addition to their well-known beef extracts and Lab-Lemco, a standardised extract for culture media, showed their Oxoid organotherapeutical preparations, notably Hormonoxoid another pluriglandular tonic extract for injection; and Liveroid, Oxoid liver extract for injection, and Erythroid (desiccated gastric tissue) for anæmia.

(64) PARKE, DAVIS AND CO. (Beak-street, W.) selected from their range of products Antuitrin "Growth," a concentrated preparation of growth hormone from the anterior lobe of the pituitary gland, standardised on female rats; Gonococcus Soluble Toxin (Corbus-Ferry) grown in a special medium and used by intradermal injection; Staphylococcus Vaccoid, a mixture of staphylococcus toxoid and vaccine constituting a complete staphylococcal antigen; and Tuberculin P.P.D., tablets containing the purified protein derivative obtained from standard tuberculin by the method of Florence B. Seibert.—(75) PETROLAGAR LABORATORIES LTD. (Braydon-road, N.) had added to their Petrolagar compounds a pleasant non-bitter Petrolagar with Cascara, for those accustomed to doses of this drug; and Kaldrox, an emulsoid developed by activating colloidal kaolin with aluminium hydroxide gel, used for colitis, flatulence, and diarrhœa and in the treatment of peptic ulcer.—(99) PHARMACEUTICAL SPECIALITIES (MAY AND BAKER) LTD. (Dagenham, London) picked out for special mention Stellidin, a 4 per cent. histidine solution put up in ampoules for intramuscular injection for the ambulatory treatment of peptic ulcer; Sonalgin, a compound of soneryl and amidopyrin; Vinyl Ether, a new anæsthetic giving rapid and complete relaxation without sickness; and Ergometrine, a water-soluble, quick-acting alkaloid ergot given orally or intramuscularly.—(155) REED AND CARNRICK (CANADA) LTD. (Distributors: Coates and Cooper Ltd., 94, Clerkenwell-road, E.C.), from among their range of endocrine products pointed out Nephritin, composed of cortex and convoluted tubules of the kidney; and introduced Tonicine, a new male and female gonadal tonic and restorative combined with strychnine and glycerophosphates.

(147) SANDOZ PRODUCTS (J. FLINT) (134, Wigmore-street, W.) among their many products had some new preparations, notably Belliergal, a compound of belladonna, Femergin and phenyl-ethyl-malonylurea for autonomic nervous disorders; they also pointed out the value of Femergin (ergotamine tartrate) for migraine; and Quinine-Calcium, intravenous and intramuscular injections, recommended for its preventive action against the penetration of toxins in acute infections.—(27, 28) SAVORY AND MOORE LTD. (143, New Bond-street, W.) showed their many products, including Medilax, a silver-coated vegetable pillule for constipation; Urotropal, their urinary antiseptic; and their Fructoles preparations, offering many medicaments in palatable solution; also Nembutal (Abbott) for short hypnotic and long sedative action, and Bromural (Knoll), a soporific.—(47) SCHERING LTD. (188–192, High Holborn, W.C.) selected from their range of medicinal products Progynon, for ovarian hypofunction; Proluton, corpus luteum hormone; Neotropin, a urinary antiseptic, to be combined with Cylotropin in obstinate cases, and their well-known Veramon, Medinal, and Uroselectan B.—(25a) SCOTT AND BOWNE LTD. (10, Stonecutter-street, E.C.) claimed for their Halivite cod-liver oil a vitamin potency of 1500 international A units and 200 international D units; and, in addition to the plain oil and pills, now make a malt and cod-liver oil extract for which they claim high potency.—(164) SHARP AND DOHME LTD. (76–78, City-road, E.C.), among their range of medi-

caments, pointed out that they were the first to introduce the single-dose treatment for diphtheria prophylaxis; they also showed their staphylococcus toxoid; Solution S.T. 37; and S.T. 37 Sucrets for mouth disinfection.—(153) TONICITY LABORATORIES, LTD. (20–24, Emerald-street, W.C.), showed their preparation Halmagon for administering the halogen compounds of magnesium.—(33, 34) WILLIAM R. WARNER AND CO., LTD. (300, Gray's Inn-road, W.C.), in addition to their Veganin, recommended for influenza, introduced Vince, a new antiseptic powder which in solution yields about 9·5 per cent. of nascent oxygen.

Foods, Drinks, and Vitamin Preparations

(135) ALLEN AND HANBURYS LTD. (Bethnal Green, E.) showed their series of scientifically arranged foods for infants from birth to weaning, and their special half cream milk food, milk food with additional iron, whey, and cereal; also cod-liver oil, orange juice, and the combination in Haliborange.—(93) BOVRIL LTD. (148–166, Old-street, E.C.) showed their popular meat extract and stressed the Invalid form, devoid of seasoning, more highly concentrated, and with a greater albuminoid content.—(84) BRAND AND CO., LTD. (Mayfair Works, Vauxhall, S.W.), showed their pure raw meat juice; essences of beef and chicken; meat lozenges; and Brandox, preserved by a new method—the addition of malt extract instead of salt, which incidentally adds vitamins A, B, and D.—(100, 101) CADBURY BROTHERS LTD. (Bournville) once again dispensed heartening drinks of Bourn-vita and offered samples of their chocolate.—(46) CORN PRODUCTS CO., LTD. (Bush House, W.C.), showed their Dextrosol Brand Dextrose, identical with the sugar of the blood and tissues; and Karo syrup for infants and children, a mixture of non-irritating sugars in which the first digestive step has been accomplished.—(77, 78, 79) COW AND GATE LTD. (Cow and Gate House, Guildford, Surrey), in addition to their milk foods, displayed Frailac, a milk food with low fat and protein content for frail infants; Hemolac, a full cream milk food containing iron ammonium citrate; Lacidac, lactic acid milk powder, and especially Daltose C.G., a carbohydrate mixture containing maltose, dextrose, soluble dextrins, and vitamin D.—(115) ENERGEN FOODS CO., LTD. (Willesden, N.W.), had added to their Energen bread and other dietary preparations, Energen Cocoa, and a pleasant flavoured, unsweetened bramble jelly.—(163) GRANOSE FOODS LTD. (Watford) showed their dietetic foods, including Granose biscuits, consisting of pure wheat grain, and Granovita gluten bread for diabetes and obesity.—(72) HEUDEBERT DIETETIC PRODUCTS (Mount Pleasant, Alperton, Middlesex) showed their many food products, especially those for diabetes, dyspepsia, obesity, and cardiovascular and hepatic disorders; and introduced Feculyse powder, a wheat-germ preparation flavoured with caffein-free coffee, giving a diastase action very useful in cases of starch indigestion.—(108) HOVIS LTD. (London) had a display of the bread and cakes which can be made from their whole meal wheat flour containing vitamin B.—(112) INGRAM AND ROYLE LTD. (45, Belvedere-road, S.E.) showed the mineral waters for which they are agents, notably Vichy Célestins, Contrexéville-Pavillon, Karlsbad Water and Hunyadi Janos aperient water.—(49) KEEN, ROBINSON AND CO., LTD. (Carrow Works, Norwich), in addition to their Robinson patent barley and groats and Almata synthetic infant food, pointed out their mustard ointment, which can be applied directly as a poultice without any preparation, and their new Lemon Barley Water for the rapid preparation of a pleasant beverage.—(139) LEVER BROS. LTD. (Port Sunlight) showed their vitamin A and D products Essogen and Advita; Essogen is vitamin A, free from D, with a blue value of 2000, and Advita is A and D together, with an A value of 1250 and a D value of 1000 international units.

(146) THE MARMITE FOOD EXTRACT CO., LTD. (Walsingham House, Seething-lane, E.C.), presented again their vitamin-B preparation and mentioned its anti-anæmic properties, the latest work on which has been incorporated in a new issue of their medical booklet.—(68, 69) NESTLÉ AND ANGLO-SWISS CONDENSED MILK CO. (6–8, Eastcheap, E.C.) showed their milk and cream preparations, and Lactogen dried milk in a new and attractive packing; and introduced Eledon, a dried buttermilk.—(50) PHILLIPS YEAST PRODUCTS LTD. (Park Royal-road, N.W.) had a stand to remind the medical profession of the value of live yeast in the treatment of many conditions, including anæmia, and pointed out that their preparation contains 1140 international units of vitamin B_1 per ounce.—(136) SISTER LAURA'S INFANT AND INVALID FOOD CO., LTD. (Springfield Works, Bishopbriggs, Glasgow), showed Sister Laura's preparation for rendering milk digestible; and Zomogen, a liquid restorative without metallic iron.—(126, 127, 128, 129, 130) TRUFOOD LTD. (Bebington, Wirral, Cheshire) showed their humanised and full cream dried milks; and Secway, a whey preparation for premature infants and the treatment of digestive disorders.—(125) VIROL LTD. (Hanger-lane, Ealing, W.) attracted visitors by an illuminated graph showing the growth in weight of children on Virol, halibut-liver oil, and cod-liver oil respectively. The Virol growth corresponded almost exactly with the standard weight increase while the others fell below it. It was suggested that the cod-liver oil lacked protein and mineral salts and halibut-liver oil contained rather too much vitamin A for some children.—(85) VITAMINS LTD. (23, Upper Mall, W.) presented Bemax, the only vitamin food which is daily assayed by the Birch and Harris bradycardia method; and Fertilol oil of wheat germ for the administration of vitamin E.—(89) VITMAR LTD. (Southfields, S.W.) showed their well-known preparations and food for diabetes, obesity, and the Ketogenic diets, especially stressing their cheap, low-carbohydrate Health Bread for slimming and the treatment of indigestion.

Surgical Instruments and Appliances

(90) ALLEN AND HANBURYS, LTD. (Bethnal Green, E.), had a large display of surgical instruments, appliances, and equipment, notably the St. Bartholomew's Hospital operation table with self-locking device for any position and lateral tilting movement, mounted on a new platform base which increases stability and enables the surgeon to sit; electrical instrument sterilisers of new design fitted with heat switch and automatic cut-out; A and H Azoule catgut mounted on eyeless needles; instruments for the treatment of fractures by various surgeons; suction pumps for producing negative and positive pressure; and Dr. Letterman's foot supports.—(7) ARMOUR AND CO., LTD. (Armour House, St. Martin's-le-Grand, E.C.), emphasised the value of their new sterilised surgical sutures on eyeless needles of carbon steel for causing the very minimum of trauma, and mentioned that all their sutures and ligatures are tested for sterility in the pathological department of a London hospital.—(30, 31) ARNOLD AND SONS (50–52, Wigmore-street, W.), from among their display of surgical instruments and tables, picked out a new transformer for use off main A.C. supply for light and cautery burners; a new blood drip apparatus used by Marriott and Kekwick; Minnett's gas and air apparatus for maternity cases; and Baron's antidote bag, containing suitable treatment for poisoning cases. They pointed out that the dressings prepared by John Bell and Croyden are now periodically tested by the Bland Sutton Institute.

(59) AURAL APPLIANCES LTD. (135, Wigmore-street, W.) demonstrated the latest improvements to their Sonotone hearing aids, which can now pick out sounds from all directions; and also a neat radio aid which enables the deaf to hear broadcasts through any set by bone conduction.—(52) BRITISH ALKALOIDS LTD. (Winchester House, E.C.) showed their antiseptic T.C.P., a combination of chlorine and iodine with phenol and benzoic acid.—(145) CLEMENT

CLARKE LTD. (16, Wigmore-street, W.) picked out from their optical apparatus the new Admiralty Diagnostic Set; the new Livingston Malingerers and Phoria Test; the Fincham Coincidence Optometer, a small training instrument for convergence insufficiencies; and facial masks for disfigurements.—(141) STANLEY COX LTD. (11, Gerrard-street, W.) stressed their ultra short wave diathermy equipment with many improvements; and their cathode ray electrocardiograph with a much finer photographic tracing than has hitherto been obtained.—(167) H. E. CURTIS AND SON, LTD. (7, Mandeville-place, W.), showed their range of supports, notably the Curtis Belt and corset belt En Mains Croisées.—(33A) CUXSON, GERRARD AND CO., LTD. (Oldbury, Birmingham), introduced their new elastic plaster bandage Ceraban which is free from rubber and antiseptic and far less irritating than older preparations; also Peptavin, a nutrient tonic peptone wine.—(65) THE DENVER CHEMICAL MANUFACTURING CO. (London, N.W.9) reminded the profession of the value of antiphlogistine antiseptic poultice.—(53, 54) DOMEN BELTS CO., LTD. (67, Welbeck-street, W.), among their various pregnancy, gastroptosis and general support belts, showed a new corset belt for heavy figures and those suffering from weak abdominal muscles: special ribbons running diagonally give resilience and supple support.

(8) DOWN BROS., LTD. (21 and 23, St. Thomas's-street, S.E.1), picked out from their comprehensive selection of instruments several surgeons' special instruments for open operations for fracture and for pin and Kirschner wire traction, and Ferris Smith's instruments for external ethnoid operation.—(154) J. AND E. FERRIS LTD. (33, Museum-street, W.C.) showed the latest improvements in their light, strong artificial limbs, made in exact counterpart of the good limb to avoid self-consciousness.—(18A) HARMAN FREESE (32, Great Dover-street, S.E.1) showed their well known range of contraceptive appliances, and remarked that the Gamophile, extra thin, 3-ply rubber occlusive pessaries were receiving warm welcome from the profession.—(26) BRUCE GREEN AND CO., LTD. (14, Bloomsbury-street, W.C.), showed electric ophthalmoscopes and retinoscopes, and a number of models of optical trial cases, spectacles, and lenses.—(18) THEODORE HAMBLIN LTD. (15, Wigmore-street, Cavendish-square, W.) had a range of spectacles and ophthalmic apparatus and inexpensive diagnostic sets. They showed the Dobson amblyopia reader, printed in red and black and used with a red filter to cut out the red letters; the spinal spectacles, for reading while lying flat; a pocket torch with focal illumination; and the rising front bifocal spectacles, which lift the reading part when required.

(4) HANOVIA LTD. (3, Victoria-street, S.W.) had on view a new Alpine Sun Lamp representing the major advance in this apparatus since 1905; it has a self-starting apparatus, is economical to work, and gives great actinic intensity at any angle.—(38) HAWKSLEY AND SONS, LTD. (83, Wigmore-street, W.), had a range of instruments for blood diagnosis, stethoscopes, microscopes, and baumanometers.—(17) HINDERS LTD. (174, Estcourt-road, S.W.6) had a stand showing metal supports, foot supports, and plaster bandages, and pointed out their latest extra light, inexpensive adjustable foot support, embracing the metatarsal dome; their Vigger bandage for supporting the ankle and instep; and their Hygiaplast, packed in airtight, dustproof patent containers and supplied on master spools to which new rolls can be fitted when required.—(2) THE HOLBORN SURGICAL INSTRUMENT CO., LTD. (26, Thavies-inn, Holborn Circus, E.C.), had a display of surgical apparatus, operating tables, and chromium-plated steel consulting room furniture, and pointed out especially an electro-surgical hand motor for drills, burrs, and saws; the Holborn fitted obstetric case, and Vienna model vaginal hysterectomy instruments.—(143) JOHNSON AND JOHNSON (GREAT BRITAIN) LTD. (Slough, Bucks) showed their plasters and dressings, including the Drybak waterproof adhesive plaster, and introduced the Ethicon new process catgut prepared in such a way as to ensure absolute uniformity, complete smoothness, and extreme pliability.—(142) C. DAVIS KEELER LTD. (47, Wigmore-street, W.) picked out from their ophthalmic display a new wide angle ophthalmoscope at a reduced price; and a new operating auriscope in which the lens has been set back from the ear-piece to allow room for manipulation.—(35) THE LONDON HOSPITAL LIGATURE DEPT. (Whitechapel, E.) exhibited their ligatures, pointing out that the London Hospital Ligature Laboratories is the only place in England where sterile surgical catgut is made throughout from the animal intestine to the sterile tube.—(137) J. F. MACFARLAN AND CO. (32, Bethnal Green-road, E.), in addition to their anæsthetic ether (Keith's) and chloroform, pointed out their Brisettes chloroform ampoules for the second stage of labour; and Opoidine soluble, injectable opium for premedication and insomnia.—(43) MEDICAL SURGICAL SUNDRIES LTD. (97, Swinderby-road, Wembley) exhibited medical and surgical sundries of all descriptions.

(92) MONSOL LTD. (Vincent House, Vincent-square, S.W.) pointed out the Monsol Gel, Neo-Monsol in jelly form in collapsible unbreakable tubes; the jelly mixes instantly with hot or cold water and can even be used without water. They also showed Monsola nasal compound in dropper bottles at a reduced price.—(57) PEARSON'S ANTISEPTIC CO., LTD. (172, Buckingham Palace-road, S.W.), had added to their Iodine-Medol ointment, Medol analgesic ointment, and Creolin disinfectant, the new Creolin Soap, a super-fatted germicidal soap for toilet or surgical use.—(24) W. H. PETTIFOR (11, Victoria-street, S.W.) had increased their range of hearing aids by a new electrical stethoscope for deaf doctors which can be used either as a stethoscope or as a hearing aid and can be worked with a loud-speaker if desired.—(42) PORTABLE X-RAYS LTD. (Power-road, Chiswick, W.) had an interesting stand showing X ray negatives taken under all kinds of conditions, demonstrating the great advance made in radiography at home.—(23) RAYNER AND KEELER LTD. (100, New Bond-street, W.) showed a range of ophthalmological instruments and spectacles and said that special interest was being taken in a narrow beam ophthalmoscope and a prism illuminated auriscope.—(51) RECKITT AND SONS, LTD. (40, Bedford-square, W.C.), showed their non-toxic, non-corrosive germicide Dettol to which they have now added, in deference to the wishes of dentists, Dettolin mouth wash and gargle, a combination of Dettol and aromatics.—(12) W. J. RENDELL LTD. (161–165, Rosebery-avenue, E.C.) had on view once more their contraceptive appliances.

(88) THE SCHOLL MFG. CO., LTD. (182, St. John-street, E.C.), showed their supports and remedies for the relief and correction of foot troubles of all kinds.—(62) A. G. SHELDON AND CO., LTD. (3, Great Woodstock-street, W.), showed their sterilised surgical dressings and stock outfits, and emphasised their day and night service in all departments.

(66) T. J. SMITH AND NEPHEW, LTD. (42, Tavistock-square, W.C.), have put up their popular Elastoplast dressings in a doctor's set containing 117 dressings of various sizes and types; they also have wound dressings—lint and gauze pads medicated with 5 per cent. bismuth subgallate on the Elastoplast base; and Cellona plaster-of-Paris bandages and Cellona splints.—(6) THE SURGICAL MANUFACTURING CO., LTD. (83, Mortimer-street, W.), had a display of instruments including a new series of rectal and vaginal specula with proximal lighting, and a new universal syringe for continual local anæsthetic injection, aspiration, infusion, transfusion, and pile injection.—(36A) EDWARD TAYLOR, LTD. (Monton, Lancs.), showing their wide range of medicated plasters, emphasised that their elastic adhesive is guaranteed not to cause irritation.—

(97) THERMOGENE CO., LTD. (160, Piccadilly, W.), in addition to their popular medicated wadding, emphasised the value of Thermogene Vapour Rub for rheumatism and headache.—(161) VICTOR X RAY CORPORATION LTD. (15–19, Cavendish-place, W.) specially pointed out among their apparatus the Inductotherm short-wave diathermy machine employing an entirely new principle—that of electro-magnetic induction—for heat generation in the tissues; this instrument generates an alternating current of 12,000,000 cycles per second and the only applicator required is the flexible insulated cable wound round the part to be treated.—(105) "WAITES" ANTISEPTIC LOCAL ANÆSTHETIC (Cook's Laboratories, New York) showed a new product; a local anæsthetic with Cobefrin, a new vaso-constrictor without epinephrin reactions, as well as their various antiseptic preparations and Solila steel needles.—(123) WATSON AND SONS (ELECTRO-MEDICAL) LTD. (Sunic-house, Parker-street, W.C.) selected from their X ray and light apparatus the Sunic consulting-room outfit which is compact, simple, and perfectly safe and can be supplied in portable form; the latest type of mercury-vapour apparatus; and examples of infra-red apparatus.—(16) THE WILSON RUBBER CO., LTD. (85, Buckingham-avenue, Slough), in addition to their range of rubber gloves and sleevelets, introduced a new post-mortem apron made of pure crêpe rubber, absolutely resistant to every risk of the mortuary.

PARLIAMENT

NOTES ON CURRENT TOPICS

Reassembly of Both Houses

BOTH Houses of Parliament reassembled on Tuesday, Oct. 22nd, having been summoned, a week earlier than had been arranged, under the power given to the Speaker and the Lord Chancellor at the instance of the Government by resolutions passed at the adjournment for the summer recess early in August last. The emergency power to call members of both Houses together at an earlier date was exercised for the purpose of a debate on the international situation.

Increased Children's Benefit

On Oct. 22nd Mr. ERNEST BROWN, Minister of Labour, announced an increase in the children's allowance under unemployment benefit from 2*s.* to 3*s.* This increase was recommended by the Unemployment Insurance Statutory Committee in July. The new rate will come into force on Nov. 8th.

HOUSE OF COMMONS

TUESDAY, OCT. 22ND

Ex-Service Men in Hospital

Sir IAN FRASER asked the Minister of Pensions if he had considered the hardship caused to the families of many pensioners who lost unemployment assistance under the Unemployment Acts on entering a Ministry hospital, with the result that their families may be obliged to have recourse to rate aid; and if he could see his way to remedy this grievance.—Mr. R. S. HUDSON (Minister of Pensions) replied: Yes, Sir. The hardship involved in some of these cases has been brought home to me in the course of my recent visits to Ministry hospitals. As hon. Members are aware, a pensioner who is in work when he enters hospital for an approved course of treatment can be granted under the Royal Warrant an allowance, in lieu of pension, to make up his loss of income. With the approval of my right hon. friend the Chancellor of the Exchequer, I propose in future to apply this principle broadly to the case of men who are in receipt of benefit or assistance under the Unemployment Acts before entering hospital, but who are not eligible for the standard allowance. The administrative details have still to be worked out, but briefly it is intended to pay in these cases a supplementary grant, in addition to pension, which will, within the limits of the standard warrant allowances, make up the man's income from these statutory sources to what it was before or would otherwise be had he not entered hospital, allowance being made for reduced family expense by reason of the patient's maintenance in hospital, and for any health benefit which he may receive in lieu of his unemployment benefit. This concession will, I am satisfied, meet the grievance hitherto felt by the disabled ex-Service men in question.

Unemployment Regulations

Mr. GREENWOOD asked the Minister of Labour whether the inquiry into the Regulations made under Part II. of the Unemployment Act, 1934, had been completed; and, if so, whether he could indicate the measures the Government proposed to take.—Mr. E. BROWN (Minister of Labour) replied: I have had this matter under anxious and prolonged examination, in consultation with the Unemployment Assistance Board, and our inquiries are not yet completed. As the right hon. gentleman is well aware, the subject is one of great difficulty and complexity, and in view of the importance of a right decision, not only to the unemployed but in the whole fabric of our social life, it is essential that before new arrangements are submitted to Parliament for approval they should first be examined thoroughly from every standpoint. In these circumstances, it will not be possible to take any action immediately, and I do not anticipate that any alteration can be made in the existing position of the standstill arrangements before next spring at the earliest.

Births, Marriages, and Deaths

BIRTHS

ALEXANDER.—On Oct. 17th, at a Glasgow nursing-home, the wife of J. R. B. Alexander, M.B. Glasg., Stormont, Galston, of a son.

FARMER.—On Oct. 18th, at a nursing-home in Westcliff, the wife of A. Pring Farmer, M.B. Lond., Sudan Medical Service, of a daughter.

HOLMES.—On Oct. 15th, at Paston, Peterborough, the wife of E. Arthur Holmes, M.R.C.S. Eng., of a daughter.

MACLEOD.—On Oct. 18th, at St. Margaret's, Inverness, the wife of Dr. Alastair MacLeod, London, of a daughter.

PEREGRINE.—On Oct. 11th, Dr. R. L. Peregrine, of Kessingland, near Lowestoft, of a daughter.

PROWSE.—On Sept. 19th, at Ootacamund, South India, the wife of Dr. A. S. Prowse, Assam Oil Co., Ltd., of a daughter.

MARRIAGES

ALDERTON—BLACKMAN.—On Oct. 12th, at Bexhill, R. Maitland Alderton, F.R.C.S. Eng., of Hadleigh, Suffolk, to Kathleen Blackman, of Bexhill.

JEFFARES—DERBYSHIRE.—On Oct. 19th, at All Souls' Church, Langham-place, London, W., James Langley Maynard Jeffares, F.R.C.S. Edin., of Kegworth, to Katherine Mary, daughter of Mr. J. N. Derbyshire, of Rempstone Hall, Notts.

DEATHS

CAMPBELL.—On Oct. 8th, at Cambridge, Massachusetts, Jessie Deans Rankin Campbell, M.B. Glasg., B.Sc., wife of Charles Macfie Campbell, M.D. Edin., of Harvard University.

FOSTER.—On Oct. 13th, at University College Hospital, following an operation, George Muir Foster, M.R.C.S. Eng., of Hampstead, aged 65.

GIBSON.—On Oct. 18th, at the hospital of Saint Nicholas, Pyrford, Surrey, John Monro Gibson, F.R.C.S. Eng., of Emsworth, Hants, aged 30.

MAY.—On Oct. 16th, suddenly, George Francis May, M.D., C.M. McGill, L.S.A., late Medical Superintendent of the Durham County Mental Hospital.

PLOWRIGHT.—On Oct. 16th, at North Wootton, King's Lynn, Charles Tertius Maclean Plowright, M.B. Camb.

ROWSE.—On Oct. 13th, Edward Leopold Rowse, M.D. Brux., Lieut.-Colonel, R.A.M.C., T., of Putney and Harley-street, aged 67.

WILLS.—On Oct. 15th, at Princes Risborough, Bucks, Alfred Wills, M.D. Lond., B.Sc., Hon. Captain R.A.M.C., aged 46 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

ULVERSTON'S NEW HOSPITAL.—Plans for the new hospital at Ulverston, in Furness, are in preparation. It will provide 54 beds, including a maternity section and a children's ward. The estimated cost is £30,000, of which over £18,000 has already been received.

MEDICAL NEWS

University of Oxford

On Oct. 17th the degree of bachelor of medicine was conferred on R. E. Adam.

University of Cambridge

On Oct. 18th the following degrees were conferred :—

M.D.—B. F. Longbotham.

M.B., B.Chir.—E. M. Griffin.

M.B.—*J. D. Hay, J. N. Groves, and C. G. Parsons.

B.Chir.—*T. D. F. Money, *P. H. L. Playfair, R. I. N. Greaves, L. R. Gardner, E. P. H. Drake, J. H. Patterson, and W. F. Walton.

*By proxy.

Dr. G. H. F. Nuttall, F.R.S., emeritus professor of biology and director of the Molteno Institute, has been elected an honorary fellow of Christ's College.

University of Dublin

On Oct. 16th the degree of doctor of medicine was conferred on Simon Wigoder.

University of Glasgow

Mr. Edward Hindle, Sc.D., has been appointed regius professor of zoology in place of Prof. John Graham Kerr, who has resigned. Dr. Hindle has long been associated with medical work, notably in the investigation of yellow fever.

On Oct. 19th the following degrees were conferred :—

M.B., Ch.B.—Margaret D. Green, H. L. Campbell, and P. J. Cantor (with honours); R. M. Calder, James Cuthbert, I. D. Henderson, J. S. Hall, D. C. Miln, H. T. Richmond, Catherine Richardson, G. H. G. Hope, A. D. T. Govan, A. S. Rogen, Julius Levine, and J. B. Lynch (with commendation); John Aitken, May D. Anderson, Isaac Ashforth, A. Y. Barclay, R. J. W. Barlow, Harold Bernstein, J. C. Brash, D. R. Brown, P. M. H. Browning, I. W. Burke, J. F. Cadas, J. H. Chambers, J. H. C. Clarke, James Cochran, Julius Cohen, G. D. Cresswell, Maud G. Dempster, R. I. T. Dunnachie, D. J. Easton, J. C. Eaton, P. F. Fletcher, Audrey M. Forbes, Kenneth Fraser, Max Freedman, W. G. Garrow, G. McL. Gorrie, R. J. Gourlay, Ronald Gowans, William Gray, Henry Greer, A. W. St. C. Greig, J. F. K. Grieve, G. H. Hall, Mary D. Hardie, G. A. E. Harman, J. W. Henderson, John Hilferty, W. C. Howie, H. E. Hutchison, Charles Kelly, W. McK. S. Kelso, A. S. M. King, G. B. L. Laird, William Laurie, James Leckie, William Leslie, D. S. MacL. MacArthur, Patrick MacArthur, Elizabeth McC. McCann, W. M. McCutcheon, R. S. McGeorge, G. A. Macgregor, J. S. McGregor, William McKechnie, William MacKendrick, Norman Mackenzie, C. J. Mackinlay, Angus Macleod, J. D. McRaw, William Magauran, J. B. Mair, S. L. Mann, R. D. Menzies, J. S. Meredith, H. H. Miller, Archibald Morrison, H. A. Mullen, E. H. Murchison, D. A. Naismith, Folarin Ogunro, D. B. Ramsay, William Richmond, Jacob Schloss, D. G. Smith, F. A. Smith, David Stenhouse, J. E. Struthers, Janet W. Sutherland, George Swan, J. F. Swan, J. R. Taylor, Donald Thomson, J. E. Tillotson, James Watt, W. J. Weetch, J. H. Werk, T. C. B. Williamson, R. W. Wyse, R. P. Young, and W. C. Young.

The Brunton memorial prize and the West of Scotland R.A.M.C. memorial prize were awarded to Margaret D. Green.

Royal College of Surgeons of Edinburgh

At the annual meeting of the College held on Oct. 16th the following office-bearers were elected for the ensuing year: president, Mr. Henry Wade; vice-president, Dr. A. H. H. Sinclair; secretary and treasurer, Mr. J. W. Struthers; members of president's council, Mr. W. J. Stuart, Dr. J. S. Fraser, Mr. J. M. Graham, Prof. R. W. Johnstone, Prof. D. P. D. Wilkie, and Mr. J. J. M. Shaw; representative on the General Medical Council, Mr. Alex. Miles; convener of museum committee, Dr. A. Logan Turner; and librarian, Mr. D. M. Greig.

The following candidates who have passed the requisite examinations were admitted to the fellowship :—

U. P. Sinha, M.R.C.S. Eng.; E. W. B. Griffiths, M.B. N.Z.; G. N. Barker, M.B. Lond.; E. F. Barnardo, M.B. Lond.; A. G. Bester, M.B. Cape Town; D. G. W. Brown, M.B. Liverp.; R. C. Burr, M.D. Ontario; H. P. Clark, M.D. Manitoba; P. F. S. Court, M.R.C.S. Eng.; H. D. Cronyn, M.R.C.S. Eng.; John Durran, M.B. Edin.; T. G. H. Hogg, M.B. Melb.; Christopher Hotson, M.B. Edin.; Daniel Hugo, M.B. Dub.; R. J. Kellar, M.B. Edin.; M. N. Khanna, M.B. Punjab; A. L. McFarlane, M.R.C.S. Eng.; W. A. Mackey, M.B. Glasg.; N. J. L. Margetson, M.D. Ontario; A. G. G. Melville, M.B. Edin.; Jack Penn, M.B. Witwatersrand; L. W. Plewes, M.D. Toronto; Aileen M. S. Pollock, M.R.C.S. Eng.; Thomas Purce, M.B. Belf.; T. R. Quinn, M.B. Sydney; A. C. Riley, M.B. Lond.; A. L. Sheild, M.B. N.Z.; George Stephen, M.B. Aberd.; and D. R. L. Stevenson, M.B. N.Z.

Royal Sanitary Institute

Dr. M. T. Morgan, medical officer of the Ministry of Health, will deliver the Benjamin Ward Richardson lecture at the institute (90, Buckingham Palace-road, London, S.W.), on Tuesday, Nov. 12th, at 5.30 P.M. His subject will be some details of the system of health inspection of meat and meat products destined for export, in the great abattoirs of South America. Sir Arthur Newsholme will preside.

West Riding Association of Graduates of the University of Edinburgh

This association is holding its annual general meeting at the Midland Hotel, Bradford, on Nov. 6th at 6.45 P.M. The annual dinner will take place at 7.30 P.M., and the guest of the evening will be Mr. Henry Wade. Further information may be obtained from the hon. sec., 4, Clifton Villas, Bradford, Yorks.

Post-graduate Teaching in Glasgow

The Glasgow Post-Graduate Medical Association has arranged for a series of lectures and clinical demonstrations for practitioners to be given on Wednesday afternoons from Nov. 6th to May 27th at 4.15 P.M. Special courses in ophthalmology, obstetrics, radium therapy, and diseases of the ear, nose, and throat will also be held during the session. The secretary may be addressed at 9, Woodside-terrace, Glasgow, C.3.

London Hospital Dinner

Prof. H. M. Turnbull presided over the annual dinner held at the Trocadero Restaurant on Oct. 17th, and the 309 diners included 64 of his former pathology assistants, concentrated at a central table. Before there were any speeches Prof. Turnbull took wine with them, and received a first instalment of the musical honours which were later accorded by the whole room. After speaking of the events of the hospital year, which has seen an entry of students unequalled since 1906, he drew a comparison between present conditions and those when he came to the London—when members of the staff, springing out of their broughams and victorias, were distinguishable from students, and (in the absence of morbid anatomists) buried their own dead. In a man of his temperament, he said, to whom everything at times seemed futile, it was always a great comfort to have young people around: the young gave far more than they ever received. His own work would have been given up without Robert Worthington, and no man in any walk of life had ever had a more faithful and altruistic assistant than W. W. Woods. There had also been women assistants in the department, and he was very proud of them. It was sometimes said that the presence of women would spoil a hospital dinner. But why? Any woman who had worked in a pathological laboratory was likely to know what passed for wit among men—Dr. Charles Miller, proposing the chairman's health, said it was half in jest that long ago L. A. Smith described Turnbull's department as the palace of truth, but this was exactly what it had become. He recalled that Turnbull, after his distinguished career at Oxford had won a cup on the Cresta run and studied in foreign schools before coming back to building up the foremost pathological institute in this country. Besides raising a school of morbid anatomists he had taken an interest in every student who came under him, so that his name was one which inspired pride, gratitude, and affection.

Various speakers then rose in response to popular demand. Dr. Woods confined himself to two words; Dr. Lewis Smith said that the old clinicians, almost bankrupt alike in money and ideas, had covered their deficiencies magnificently; Sir James Walton said there was no other hospital where clinicians received the same ungrudging help they got from Prof. Turnbull's department; Mr. Russell Howard, Mr. Hugh Lett, and Mr. James Sherren (returning to the dinner after ten years) made lively contributions to the entertainment; Mr. McNeill Love contrived to acknowledge his golf cup with an apt tribute to Prof. Turnbull's training; and Mr. Neligan, encouraged by Sir William Goschen, said a few well-chosen words on behalf of himself and Mr. Lindsay as organisers of the dinner. The survivors then went home.

Society for the Provision of Birth Control Clinics

A lecture on the theory and practice of contraception will be given to medical students and practitioners by Dr. Gladys Cox on Friday, Nov. 15th, at 6 P.M., at the Walworth Women's Welfare Centre, 153A, East-street, London, S.E. Practical demonstrations will be given at 6 P.M. and 7 P.M. on Nov. 22nd and 29th. Further information may be had from the secretary at the clinic.

Tribute to Dr. D. A. Coles

On his retirement from the chairmanship of the advisory medical committee of the Industrial Welfare Society and of the Council of Industrial Medicine, Dr. D. A. Coles, with Mrs. Coles, was entertained to dinner at the Goring Hotel, London, on Oct. 15th. Prof. E. L. Collis presided, and a letter was read from the Duke of York, president of the society, paying a warm tribute to the work accomplished by Dr. Coles. Letters expressing appreciation of all he had done in promoting international congresses of doctors were received from Dr. C. J. Mijnlieff (International Association for Life Saving and First Aid to the Injured), Dr. C. Yersin (Swiss Medical Society for Industrial Accidents and Diseases), and Dr. Langelez (International Congress for Accidents and Industrial Diseases). A cable from Dr. H. H. Kessler (Newark, U.S.A.) on behalf of the American members of the International Congress of Industrial Accidents and Diseases was also read. Short speeches were delivered by Dr. Margaret Dobbie-Bateman, Dr. Edward Burnet, Dr. Gilbert Burnet, Mr. Robert Hyde, and Dr. T. E. A. Stowell. In expressing his thanks, Dr. Coles congratulated Dr. Stowell on his appointment as chairman of the advisory medical committee, and the members on having secured one so eminently fitted for the post.

Fellowship of Medicine and Post-Graduate Medical Association

The following all-day courses are to be given: chest diseases, at the Victoria Park Hospital (Oct. 28th to Nov. 2nd); urology, at St. Peter's Hospital (Nov. 4th to 16th); and medicine, surgery, and gynæcology, at the Royal Waterloo Hospital (Nov. 11th to 23rd). Afternoon courses will be held as follows: venereal diseases, at the London Lock Hospital (Nov. 18th to Dec. 14th); infants' diseases, at the Infants Hospital (Nov. 25th to Dec. 7th). A week-end course in clinical surgery will be given at the Royal Albert Dock Hospital (Nov. 2nd and 3rd); and in gynæcology at the Samaritan Hospital (Nov. 15th and 16th). On Nov. 7th Dr. Norman Haire will lecture on practical contraception at 4 P.M. at the Medical Society of London. Dr. Gardiner-Hill's lecture on thyroid in the endocrinology series which was postponed will be given on Tuesday, Oct. 29th, at 8.30 P.M. at the National Temperance Hospital. A clinical and pathology course for M.R.C.P. candidates will be held on Tuesdays and Thursdays, from Nov. 26th to Dec. 12th, at 8 P.M. at the National Temperance Hospital. The courses and lectures are open only to members and associates of the fellowship. The secretary of the Fellowship may be addressed at 1, Wimpole-street, London, W.1.

Research at Maudsley Hospital

At its meeting on Oct. 22nd the London County Council accepted the offer of the Rockefeller Foundation to contribute £9000 to be expended on psychiatric research at the Maudsley Hospital, Denmark Hill, over a period of three years at the rate of £3000 annually. It has been agreed that the grant from the Foundation shall be used as salaries for five research workers to be nominated by the medical superintendent of the hospital and the director of the central pathological laboratory. For the present two of these posts are to be held by workers engaged on clinical investigations which will be carried out mainly in the hospital, and Dr. W. Mayer Gross, formerly professor at the University of Heidelberg, and Dr. Erich Guttmann, formerly privatdozent at the University of Breslau, have been appointed. The other three workers will be engaged in pathological research, mainly in the laboratory, and Dr. Alfred Meyer, formerly professor at the University of Bonn, Dr. Adolf Beck, formerly assistant at the Institute of Hygiene and Bacteriology of the University of Marburg, and Mr. Grey Walter, B.Sc., formerly research assistant at the pathological laboratories, Cambridge, have been appointed.

Vacancies

For further information refer to the advertisement columns

Accrington, Victoria Hospital.—H.S. £150.
Bagshot Rural District Council, &c.—M.O.H., &c. £1000.
Belgrave Hospital for Children, Clapham-road, S.W.—H.S. At rate of £100.
Birmingham City.—Asst. M.O. for Maternity and Child Welfare. £500.
Birmingham United Hospital.—Res. Anæsthetists for General Hospital. £100 and £120 respectively.
Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.
Bradford Royal Infirmary.—H.S. At rate of £135.
Brentwood, Essex County Mental Hospital.—Jun. Asst. M.O. £510.
Brighton County Borough Mental Hospital, Haywards Heath.—Asst. M.O. £350.
Bristol Eye Hospital.—Jun. Res. H.S. £100.
Bristol, Ham Green Hospital and Sanatorium.—Jun. Asst. Res. M.O. £250.
Chesterfield Poor Law Institution and Infirmary.—Res. M.O. £450.
Dreadnought Hospital, Greenwich.—Anæsthetist. 50 guineas.
Dundee Royal Infirmary.—Hon. Asst. Visiting Surgeon.
East Ham Memorial Hospital, Shrewsbury-road, E.—Hon. Physician.
Finsbury Dispensary, Brewer-street, E.C.—Res. and Asst. Res. M.O.'s. £250 and £200 respectively.
Folkestone, Royal Victoria Hospital.—Jun. Res. M.O. At rate of £150.
General Lying-in Hospital, York-road, Lambeth, S.E.—Jun. Res. M.O. and Anæsthetist. At rate of £100.
Halifax General Hospital.—Jun. Res. M.O. £250.
Hastings, Royal East Sussex Hospital.—Asst. Pathologist. £300.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Asst. Physician. Also Hon. Asst. Surgeon.
Hostel of St. Luke, 14, Fitzroy-square, W.—Res. M.O. At rate of £200.
Hove General Hospital.—Hon. Physician. Also Hon. Asst. Anæsthetist.
Huddersfield Royal Infirmary.—H.S. for Eye, Ear, and Obstet. Depts. At rate of £150.
Leeds, Killingbeck Sanatorium.—Sen. Asst. Res. M.O. £350.
Leicester Royal Infirmary.—Jun. Res. Anæsthetist. At rate of £150.
L.C.C.—Temporary District M.O.'s for Special Areas. £100–£235.
Liverpool, Smithdown-road Hospital.—Sen. Res. Asst. M.O. £350.
London Homœopathic Hospital, Great Ormond-street, W.C.—Gynæcological H.S. At rate of £100.
London Hospital, E.—Surgical 1st Asst. and Reg. £300.
Manchester City.—Asst. Tuber. O. £650.
Maudsley Hospital, Denmark Hill, S.E.—2nd Asst. M.O. At rate of £625.
Metropolitan Ear, Nose, and Throat Hospital, 2, Fitzroy-square, W.—Asst. Surgeon and Sen. Clin. Asst.
Newcastle-upon-Tyne, City Hospital for Infectious Diseases.—Res. Med. Asst. £350.
Newport, Mon., Royal Gwent Hospital.—H.S. At rate of £135.
Oldham Royal Infirmary.—Cas. O. and H.P. At rate of £175.
Prince of Wales's General Hospital, N.—Hon. Physician to Dept. of Physical Medicine.
Princess Louise Kensington Hospital for Children, St. Quinton-avenue, W.—Hon. Asst. Physician.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Res. M.O. for Isolation Hospital. At rate of £200. Res. Anæsthetist. At rate of £100. Res. Anæsthetist and Dist. Res. M.O. At rate of £90. Also Asst. Res. M.O. At rate of £80.
Queen's Hospital for Children, Hackney, E.—Dermatologist.
Rotherham Hospital.—H.P. £180.
Royal Chest Hospital, City-road, E.C.—Res. M.O. Also H.P. At rate of £150 and £100 respectively.
Royal College of Physicians, Pall Mall East, S.W.—Leverhulme Research Scholarship. £500.
Royal Free Hospital, Gray's Inn-road, W.C.—Anæsthetic Registrar. £100. Also Dermatologist.
St. Helens Hospital, Lancs.—Jun. H.S. £150.
St. John's Hospital for Diseases of the Skin, 49, Leicester-square, W.C.—Part-time Radiologist. At rate of £125.
St. Thomas's Hospital, S.E.—Ophthalmic Surgeon.
Sheffield Jessop Hospital for Women.—Asst. Hon. Surgeon.
Sheffield, Winter-street Hospital.—Asst. Tuber. O. £350.
Southend Municipal Hospital.—Asst. M.O. for Rochford Municipal Hospital. £350.
Southend-on-Sea General Hospital.—Hon. Physician for Charge of Physical Medicine Dept.
South London Hospital for Women, Clapham Common, S.W.—Clin. Assts. for Gynæcological Out-patients.
Wakefield, Scarbor Park Mental Hospital.—Asst. M.O. £650.
West Bromwich County Borough.—M.O.H. and School M.O. £1000.
West London Hospital, Hammersmith-road, W.—Res. Cas. O. At rate of £100.
Wimbledon Hospital, Thurstan-road, S.W.—Res. M.O. At rate of £150.
Woolwich and District War Memorial Hospital, Shooters Hill, S.E.—Two H.S.'s. Each at rate of £100.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Marlow (Bucks) and Medbourne (Leicester).

NOTES, COMMENTS, AND ABSTRACTS

CHANGING SURGERY *

BY GEORGE E. GASK, C.M.G., D.S.O., F.R.C.S. Eng.
EMERITUS PROFESSOR OF SURGERY IN LONDON UNIVERSITY

YOU may think that this title presages a comparison between the results of aseptic surgery and those before Lister. My object however is to look at the present rather than the past, and the changes of which I shall speak are those of the last 30 years. Looking back over this period one realises that there are many events of great importance which might be recorded—e.g., the consolidation of the gains of asepsis over antisepsis, resulting in the evolution of a nearly perfect technique; or the revolution following the application of X rays to diagnosis. Great, however, as these innovations may be, it will be agreed, I think, on reflexion that the greatest and the most far-reaching in its effects is the growth of specialism, by which is meant the segregation of patients suffering from like diseases and their treatment by doctors who devote themselves to one special line of study. Specialism is a compelling force which brings many changes in its train. Not only has it altered the type and scope of surgery, but it has greatly affected, and is still affecting, the development and administration of our hospitals and medical services.

BIRTH OF SPECIALISM

No single date can be given to mark the birth of specialism. For centuries past there have been men, often with hereditary training, who gained their living by cutting for stone or couching for cataract. St. Barts'. had specialists of a sort in the sixteenth century and even female practitioners, for in 1554 Elizabeth Hall was paid three shillings for curing the scald head of a certain John Turner. Until the middle of the nineteenth century the physicians and surgeons undertook to teach and practise every branch of their art saving midwifery. About that time the need for specialism seems to have arisen, or at all events the cry for some special teaching, for in 1867 Dr. James Andrew and Dr. Reginald Southey were appointed demonstrators in dermatology, although there was still no special clinic. Three years later the governors set up special departments for diseases of the eye, of the ear, and of the skin. Special times were fixed for seeing the patients but the medical officer in charge remained a general physician or surgeon. Thus in 1870 Dr. Samuel Gee, then an assistant physician, was put in charge of the dermatological department. What he thought of specialism then is summed up in his remark "There is a name that I hate, nay there are two names that my soul abhorreth, the name of a specialist and the name of a consultant." In a few years came the inevitable demand that the officers in charge should be specialists and provided with beds and all the accessory facilities for carrying on their special work. These demands were met, often, it must be admitted, in a grudging manner and we have the special departments much as we know them to-day.

In the early years of the present century the tide of specialism swept on resistlessly, and it looked as if soon there would be no place for the general surgeon. Surgery threatened to divide into numerous branches, so that now we have proctologists and urologists, surgeons for the brain, the eye, the nose, the ear, as well as radiologists, cardiologists, gastrologists, and many others. This change is not confined to any one country; it has spread over the whole world, although it has reached its height in America where there is hardly an organ or a special function of the body to which a specialist is not attached.

My own feeling is that specialism is the direct and natural outcome of the growth of the natural sciences and their application to medicine. The latter half of the nineteenth century witnessed a tremendous outburst of scientific work; new discoveries came one after another—electricity, X rays, wireless, radium—in quick succession. Modern medicine makes use of almost every branch of natural science. Physics, chemistry, biology, mechanics, electricity, radiology, optics, and many others bring to medicine instruments of precision for diagnosis, for detailed examination, or for treatment. Take one example. Consider the effect of the discovery of the reflecting mirror. It has illumined the darkest recesses of the body; it has given us the ophthalmoscope, the laryngoscope, and the cystoscope; it has thrown a revealing light on many hidden mysteries. Thus medicine has become so big a subject, the number of facts to be remembered so great, that man's mind cannot grasp them all at once, with their meaning and application. He has been forced to devote his attention to a more limited field. This is the main reason for the rise in specialism.

As a result of this increased knowledge the practice and outlook of the surgeon has changed. It is no longer possible for the frock-coated surgeon to walk round his wards and make a correct diagnosis with a shrewd glance of his trained eye. I remember a distinguished surgeon of the last century when shown a section under the microscope saying "I do not know anything about this microscope, but I do know that that man has a sarcoma because I have seen one before." The modern surgeon in his white coat has to know a great deal more than his Victorian ancestor. He must have a thorough mastery of surgical technique, but he needs also a sound working knowledge of physics, chemistry, and other sciences. Take a case of urinary disease. A complete examination involves, in addition to a routine overhaul of the patient, an inspection of the interior of the bladder with a cystoscope, a pyelogram of the ureters and renal pelvis, a bacteriological examination of the urine, and an estimate of the excretory efficiency of the kidneys by a chemical analysis. The whole examination is a lengthy and complicated process involving an accurate knowledge of a number of scientific methods. It is easy to understand how it has become necessary for men to limit the scope of their work and to devote themselves to special subjects.

But though it has been found desirable that for a certain time special subjects should be taught and studied by special men, it is not necessary to believe that specialised work must always continue to be segregated from general surgery in the manner and to the extent in which it is done to-day. Some of the specialties as they become better known and their methods standardised will come back to general surgery. We see this occurring at the present time. Our young men are learning to use the cystoscope as they learn to drive a motor-car. When they become senior, they will need no cystoscopist.

Medical teaching has not given all the help to medical students that it might have done. There

* Abstract of presidential address to the Medical Society of London on Oct. 21st, 1935.

seems hope that this lack may shortly be remedied and that the syllabus of basic sciences will be so framed as to include many of the subjects which are of special interest to medical men, the curriculum becoming more harmonious and better designed to meet the growing demands of modern medicine. If the plan is successful the doctor of to-morrow will be better equipped to deal with the multitudinous applications of science. There will then be less need for the cleavage of surgery into special subjects.

DEVELOPMENT OF THE TEAM

One result of this rapid increase in scientific knowledge, and the difficulty of one man doing everything very well, is the development of the team spirit. This is of recent growth and is largely a phenomenon of the Great War and of post-war surgery. It was seen at its height in casualty clearing stations during the years 1917–18 where machinery was gradually evolved for the rapid and efficient treatment of enormous numbers of wounded. Here in the reception-rooms the patients were examined, diagnosed, and distributed to various sections where other teams took care of them for treatment and disposal. Various types of injuries—head, chest, fractured femurs—were segregated in special hospitals. War surgery became team-work because it was economical in time and more efficient.

But long before the war the Mayo Clinic was drawing visitors to Rochester, Minn., from the world over. The secret of the success of William and Charles Mayo was the development of the team spirit on a gigantic scale. In 1929 the team consisted of some 195 physicians with an army of assistants and technicians. The clinic is often belittled by those who have never visited it. It has been described as mechanisation of medicine or surgery run on the factory belt. It is true that in this clinic a patient has to go through a number of departments; but it is also true that many of the routine examinations, such as blood and urine analysis, which are necessary parts of every investigation, can be done more economically by non-medical technicians than by qualified doctors. The use of technicians has been developed to the *n*th degree at the Mayo Clinic; we are beginning to do it here—but very very slowly. Another advantage is the avoidance of dissipated energy. The doctors do not waste their time running from one end of the city to the other. A millionaire in one of the Southern States once wrote to Mayo asking him to visit him, to which Mayo replied that if the millionaire wished to see him he must come to Rochester. The millionaire telegraphed "Come at once, money no object." To this the answer flashed back "Money no object, not coming." The type of work in the Mayo Clinic is not essentially different from that done in all serious European hospitals, only in these it is done in a minor way and less efficiently. The Mayos are the owners and dictators of their hospital, they can do as they like with the money they earn; our hospitals are governed by cumbrous machinery, the legacy of monastic or conventual ancestry.

THE UNIT SYSTEM

Another change since the war is the formation of medical and surgical units. These are essentially teams of workers under the direction of a whole-time physician or surgeon who is relieved of the cares of private practice. The underlying idea is sound and in harmony with the spirit of the age. It combines the team spirit with improved organisation without interfering with the practice of bringing the medical student into intimate contact with the patients. It is an attempt to graft on our well-tried and peculiarly English system a means whereby clinical education may be placed on a more scientific basis. In my opinion the greatest hindrance to our surgical work in this country is lack of organisation and want of sufficient assistants, both medical and technical. The units have done something to remedy this lack, but they themselves have suffered from it. See what is happening to-day in our London hospitals. A few years ago a surgical firm generally consisted of a surgeon, an assistant surgeon, and one or two house surgeons. Most of the surgical services have now added an extra man, commonly called a chief assistant. Not so long back hospital governors considered it the duty of the surgeons to do all the operations. Now it is being realised that the routine operative work can be done as well by the young men, leaving more time for the seniors to do progressive work. Moreover, the performance of routine operative work is valuable training in technique for the younger men, an opportunity which was largely absent when men of my generation held junior posts. Another advantage of this increase in operative personnel is the avoidance of long lists and long operating days which tired out all concerned and led to the rough technique which at one time (according to foreigners) characterised London surgery. This is a beginning but it is not enough. With more assistance, both medical and technical, more organisation would be possible, with better work and quicker returns. The only obstacle is financial. Good surgery, like most other good things, costs money.

EFFECTS OF THESE CHANGES ON THE CHARACTER OF SURGERY

How are these changes affecting the nature of the surgery which is being done. If one compares the operation lists of the present day with those of 30 years ago, one sees that surgery has become more preservative and less excisional. The tendency to say "this structure is diseased let us cut it out" is giving place to an attempt to preserve it. How Seldom now does the surgeon spend hours dissecting out tuberculous lymphatic glands of the neck; rational treatment combined with the removal of focal sepsis has rendered this unnecessary. To take another instance, think how gastrectomy for gastric ulcer, an operation so much in vogue ten years ago, is giving way to conservative means. A few years ago, while visiting a foreign clinic, we were shown—with some pride—a cupboard in which were suspended about a hundred stomachs. It reminded me of a gamekeeper's larder. I suppose in each case some forty or fifty square inches of stomach had been removed in order to cure an ulcer about half an inch in width. A triumph of technique and a tribute to the operative skill of the surgeon but not to his common sense. I hasten to add that gastrectomy is at times beneficial, but it is the failure of remedial treatment which makes it necessary.

In urinary surgery the use of the cystoscope, of biochemical tests to ascertain renal efficiency, and the application of radiography have revolutionised our surgery and have helped to preserve many kidneys which formerly would have been excised. The enlarged prostate still remains a riddle awaiting solution. The mortality from prostatectomy has certainly been reduced but it is still too high. The work of Prof. Kennaway and his team suggests that an endocrine secretion may in time furnish a means of avoiding operation. It seems almost a paradox

that the chief aim of the surgeon should be to find ways of avoiding surgery; but that is as it should be, for the best surgeon is an operating physician.

In neuro-surgery there is a growing tendency for the surgeon undertaking operations on the brain and spinal cord to make his own examination of the patient and to make his own diagnosis. He is no longer content to act the plumber for the physician, and this is a healthy tendency. Similar changes are to be seen in the surgery of the chest. The thoracic surgeon is expert in the use of the stethoscope, the bronchoscope, and all the resources of radiology. He makes his own diagnosis and as a result a technique has been evolved by which a diseased lobe of the lung can be excised with safety. This may, one hopes, be a step towards the better understanding of the cause and prevention of disease that will lead to preservation rather than extirpation. In both these branches we see a type of specialism of which the exponents are at the same time physicians and surgeons. They are not so much thoracic surgeons or neuro-surgeons as specialists in diseases of the chest or in diseases of the nervous system. This is all to the good; for the separation of surgery from medicine, a legacy of the Middle Ages, has been the most dreadful obstacle in progress and we have not recovered from it yet. Is it too much to hope that before long the director of a unit will have the supervision and direction of both the medical and surgical sides?

A further change which has come to surgery is the use of radiation both for diagnosis and treatment. The radiographic department has become an essential part—and incidentally a very expensive part—of every hospital in every town. Radiation for curative purposes has not yet found its level. The use of radium in the treatment of cancer has not proved a universal panacea, but radium has supplanted excision for superficial growths of the skin, and it is the method of choice for the treatment of epithelioma of the tongue and mouth. The old and terribly mutilating operations about the mouth and jaw are now rarely necessary. Research in teletherapy with massive doses of radium and high-powered X ray installations is being carried on and we wait, with some impatience, for further information.

Knowledge of the anatomy and physiology of the sympathetic nervous system is leading to the performance of new operations, such as that for Raynaud's disease. Arteriography throws light on the permeability of diseased arteries. But enough has now been said to support my contention that the application of the fundamental sciences to medicine has led to profound changes in the type of surgery which is being done.

EXPERIMENTAL SURGERY

There is a very recent growth, the importance of which it is difficult to exaggerate. A purist might say that institutions for experimental surgery are merely specialised physiological laboratories and in a sense he would be correct, for advance in surgery now is largely along physiological lines. But these experimental stations are directed immediately towards solving some of the many problems which confront the surgeon daily in his work. The laboratories of the surgical unit at Edinburgh under the guidance of Prof. D. P. D. Wilkie have already produced some stimulating work. And now, owing to the far-sighted generosity of Sir Buckston Browne, the Royal College of Surgeons of England has come into possession of a research farm at Downe where Sir Arthur Keith is master and Dr. John Beattie director of research. Here indeed is an indication of the spirit of the times. The conservator of the museum now combines with that office the duties of director of research; maintenance of the museum, valuable and essential as it is, no longer marks the limits of the College's activities. Young surgeons are to have the chance of doing surgical research at a time when their minds are plastic and fertile. The *British Journal of Surgery* has decided to devote a section to the publication of this research work.

SOCIO-POLITICAL CHANGES

Walter Fletcher once remarked that the two greatest benefactors to British medicine were King Henry VIII. and Mr. Lloyd George: the one for abolishing the medieval monasteries and laying the foundations of modern hospitals, the other for giving England the insurance system. Many of us can remember the storm of indignation which followed the introduction of the panel system and the bitter vituperation which was hurled at the head of the prime mover. Now the panel is a part of English life, and in the view of most it has proved of substantial benefit to British medicine. To my mind its great advantage lies in the fact that it has so raised the standard of living among doctors that men with a higher standard of education and consequently capable of better work are coming into the profession. For evidence of this see an article on Present-day Openings of Medical Practice in THE LANCET of August 31st. The great lack of the panel system was that no institutional treatment was provided; examination and medicine but no hospitals.

This lack is now to be remedied by the results of the Local Government Act, 1929. How quietly this Act came into being compared with the storm which ushered in the panel system; and yet its influence on the health and well-being of the people will be far greater, and incidentally it will influence the quantity and character of the surgery that is done. This Act has transferred the responsibility of the care of the sick poor from the poor-law to the municipal authorities. Thirty years ago one would find a 1000-bedded workhouse infirmary in London under the care of some six medical officers. The amount of surgery done was necessarily small; it was of the nature of emergency work, such as colostomy for the relief of intestinal obstruction or of amputation for gangrenous limbs. Now the infirmaries have become municipal hospitals; they have the most up-to-date theatres, first-rate surgical equipment, and a whole-time medical service which is already creating a fine tradition. What a chance this is for surgery to develop; here is a career for young surgeons.

Some people fear that the voluntary hospitals will be overwhelmed and displaced, being unable to compete financially with hospitals maintained by the rates. Personally I am not afraid. If a voluntary hospital falls behind in the race it is its own fault and deserves to suffer. The State is tending more and more to assume the duty of looking after the health of the community. This is to be seen in the public health services and in the formation of clinics for tuberculosis, venereal diseases, child welfare, and others. Now the Local Government Act makes another big step forward by providing institutional treatment. The rich can look after themselves. The poor are also now in a fair way to be looked after. But there is an enormous middle class, who do not come under the Insurance Act and who badly need medical assistance and hospitals to which they can

go when requiring operations. What arrangements can be made for them and how are they to be financed? The answer may be compulsory universal insurance.

FOLLOW-UP SERVICE

Among the governing bodies of hospitals there is a growing consciousness that their duty is not at an end when the patient has had an operation and has left the hospital. There is a further obligation: to the patients in order to ensure uninterrupted convalescence; to the medical officers in order that they may have correct records of the value of the work done. The profession needs records of a national character, not merely the figures of a few gifted and energetic individuals.

The work of the Radium Commission offers an example of what may be done by concerted effort. When this commission founded its national centres an obligation was laid on each to establish a follow-up service and to prepare life statistics of their work. The fruits of this are now appearing as national statistics of the results of radium treatment of certain forms of cancer. It is to be hoped a similar service will rapidly replace the old form of hospital statistics, which amount to little more than a list of various diseases treated.

SURGICAL ASSOCIATIONS

A new departure in post-war surgery has been the formation of surgical associations. In 1920 was founded the Association of Surgeons of Great Britain and Ireland. Surgeons from all over the country meet at stated intervals to exchange views on current surgical topics and, what is perhaps still more important, at these meetings they learn to know each other and to make lasting friendships. Its very success however entails certain moral obligations and it seems to me that a heavy responsibility lies on it and on all British colleges of surgery to help the surgeons of the whole country. It is probably fair to say that the bulk of surgery is done by men who have not taken a special degree in surgery; it would be of great advantage to them and to the country if they could in some way be brought into contact with the progress of work.

Mention should also be made of the development of a number of surgical travelling clubs. These are small groups of surgeons which make a practice of travelling each year to visit some foreign clinic. The advantage of this is manifest for it brings British surgery in touch with all the best work of other countries and many new ideas are brought back to be put into practice at home. Surgery is becoming international, a fact that cannot help being conducive to good feeling among the nations. The Société National de Chirurgie de Paris has asked the Royal College of Surgeons of England to enter into closer relations with it and the response has been cordial.

THE FUTURE

What will be the outcome of these changes going on in the world of surgery? He must be a wise man who can foretell the future; he is a dull one who cannot see what is going on under his own nose. The State or the municipal authorities are assuming more and more the duty of looking after the health of the people. There is a swing against the rather strict limits in which specialism has been confined. Our young men are striving to widen their sphere of action and to gain a mastery of their profession by rendering themselves expert at an early age in the varied and complicated techniques needed for diagnosis and treatment. There is increasing demand for better organisation of surgery and the development of the team spirit. The disadvantage under which detached workers labour is obvious. We need to make plans on a national scale so that, instead of relying on the chance and rare talents of some super surgeon, we may have succession of effort carried on by generation after generation of surgeons. Let us remember the story of the race of the torch. They were not always the fastest runners who kept their torch alight. The Sphinx—which is Science—was slain at last by a man lame on his feet and was brought home laid on the back of an ass.

JUDICIAL HANGING

THE Medico-Legal Society of Victoria is a young society, founded only in 1931, of which the first volume of *Proceedings* has recently been published.[1] The first paper given before the society, under the presidency of Mr. Justice McArthur, was by Prof. F. Wood Jones, F.R.S., and dealt with the anatomical lesions in judicial executions—a subject, it may be remembered, which he discussed in this journal more than twenty years ago.[2] Prof. Wood Jones ranges himself with many prison officials and others in holding that a submental knot with a short drop should be adopted by those whose duty it is to carry out the sentence of the law on their fellow-men. There is certainly evidence to prove that complete fracture of the axis follows this procedure, and that it does not certainly follow the use of subaural or suboccipital knots, though Dr. C. Godfrey, in the discussion on the paper, brought forward proof of fracture of the axis in several cases where the knot had been tied under the left ear. The claim for the superiority of the submental procedure would appear to be in keeping with anatomical considerations. Disruption of the base of the skull, which is common when other methods are employed, is not, as Prof. Wood Jones says, an ideal method of procuring death, and the different ways in which this legal necessity may be attained seem to be used in haphazard fashion, and with varying results.

Mr. GEORGE BANKOFF writes to disclaim any knowledge or responsibility on his part for the article published on the front page of the *Sunday Referee* of Oct. 20th. Neither information nor photograph was supplied by him or anyone in his employ. The writer of the article was unknown to him.

Dr. ALFRED WILLS, whose death occurred on Oct. 15th at Princes Risborough, where he was partner in a general practice, qualified from Guy's Hospital in 1914. Three years earlier he had taken his B.Sc. Lond. with honours, and in 1921 he went on to take the M.D. degree. He filled house appointments at Guy's and the Croydon General Hospital and served in the R.A.M.C. with the rank of captain. Dr. F. G. Parsons writes: "Wills was one who, had fortune been kinder, would have made an ideal consulting physician, for he was clever, observant, level headed, and kind hearted. I am indebted to him for help and advice in writing the History of St. Thomas's Hospital, with which that of Guy's is so closely blended. If we have succeeded in giving a fair account of the Guy's point of view in describing the frequent and unavoidable differences between the two great hospitals placed for so many years, side by side, in Southwark, it is to Wills's logical brain that most of the credit is due. I am glad to think that his last days were cheered by the knowledge that his son had begun to follow in his footsteps at the famous medical school of which he was so proud."

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[1] Proceedings of the Medico-Legal Society of Victoria, 1931–33. Melbourne: Brown, Prior and Co. (Pty.), Ltd. Pp. 162.

[2] THE LANCET, 1913, i., 53.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MONDAY, Oct. 28th.
Odontology. 8 P.M. Mr. Cyril Howkins: Mortality and Occupational Diseases of a Dental Surgeon (presidential address). Mr. W. Warwick James: An Improved Procedure for the Removal of Third Mandibular Molars.
FRIDAY, Nov. 1st.
Otology. 10.30 A.M. (Cases at 9.30 A.M.) Mr. Harold Kisch: Review of Petrositis (presidential address). Mr. F. W. Watkyn-Thomas: Treatment of Petrositis. Sir James Dundas-Grant: Measurement of Decibel Hearing Loss by Tuning Forks.
Laryngology. 5 P.M. (Cases at 4 P.M.) Mr. Lionel Colledge: presidential address.
Anæsthetics. 8.30 P.M. Dr. H. A. Richards: presidential address.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.
MONDAY, Oct. 28th.—8.30 P.M., Dr. Macdonald Critchley and Dr. John Aydon: Electrical Injuries.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.
WEDNESDAY, Oct. 30th.—4 P.M. (St. James Hospital, Ouseley-road, S.W.), Dr. J. B. Mennell: Manipulative Surgery of the Spine.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.
FRIDAY, Nov. 1st.—8 P.M. (West London Hospital), Dr. C. E. Newman, Dr. H. E. Archer, Dr. H. W. Post, and Mr. Neil Sinclair: Diseases of the Gall-bladder.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
MONDAY, Oct. 28th.—5 P.M., Dr. L. W. Proger: Some Diseases of Bone (I.).
FRIDAY, Nov. 1st.—5 P.M., Dr. A. J. E. Cave: The Anatomy and Physiology of the Human Larynx.

UNIVERSITY OF LONDON.
THURSDAY, Oct. 31st.—5 P.M. (1, Wimpole-street, W.), Sir StClair Thomson: Defences of the Air-passages. (Semon lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Oct. 28th, to SATURDAY, Nov. 2nd.—INFANTS HOSPITAL, Vincent-square, S.W. Mon., Wed., and Fri., 8 P.M., F.R.C.S. (Primary), anatomy and physiology course.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. All-day course in gynæcology.—VICTORIA PARK HOSPITAL, E. All-day course in chest diseases.—ROYAL ALBERT DOCK HOSPITAL, E. Sat. and Sun., course in clinical surgery.—MEDICAL SOCIETY OF LONDON, Chandos-street, W. Thurs., 4 P.M., Dr. P. N. F. Bishop: Hormone Therapy in Gynæcology.—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W. Tues., 8.30 P.M., Dr. H. Gardiner-Hill: Thyroid.—Courses and lectures arranged by the Fellowship are open only to members.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, Oct. 28th.—10 A.M., Medical Wards, Skin Clinic. 11 A.M., Surgical Wards. 2 P.M., Gynæcological and Surgical Wards, Eye and Gynæcological Clinics. 4.15 P.M., Mr. Green-Armytage: Regrets.
TUESDAY.—10 A.M., Medical Wards. 11 A.M., Surgical Wards. 2 P.M., Throat Clinic.
WEDNESDAY.—10.30 A.M., Children's Wards and Clinic, Medical Wards. 2 P.M., Eye Clinic, Gynæcological Operations. 4.15 P.M., Dr. Archer: Biochemical Demonstration.
THURSDAY.—10 A.M., Neurological and Gynæcological Clinics. 12 noon, Fracture Clinic. 2 P.M., Eye and Genito-urinary Clinics.
FRIDAY, Nov. 1st.—10 A.M., Skin Clinic. 12 noon, Lecture on Treatment. 2 P.M., Throat Clinic. 4.15 P.M., Mr. Viasto: Hoarseness.
SATURDAY, 10 A.M.—Medical Wards, Children's and Surgical Clinics.
The lectures at 4.15 P.M. are open to all medical practitioners without fee. Operations and medical and surgical clincs daily at 2 P.M.

KING'S COLLEGE HOSPITAL, Denmark Hill, S.E.
THURSDAY, Oct. 31st.—9 P.M., Dr. William Brand: The Public Health Aspect of Tuberculosis.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, Oct. 28th.—3.30 P.M., Dr. Kinnier Wilson: Organic Dementia (II.).
TUESDAY.—3.30 P.M., Dr. Purdon Martin: Some Disorders of the Ductless Glands.
WEDNESDAY.—3.30 P.M., Dr. Kinnier Wilson: Clinical Demonstration.
THURSDAY.—3.30 P.M., Dr. Riddoch: The Sensory System (IV.).
FRIDAY, Nov. 1st.—3.30 P.M., Dr. Bernard Hart: The Psychoneuroses (IV.).

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, N.W.
WEDNESDAY, Oct. 30th.—4 P.M., Mr. D. H. Patey: The Uses of Traction in the Treatment of Fractures and Dislocations.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Oct. 30th.—4.30 P.M., Mr. Claude Mills: Some Interesting Urological Cases.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Oct. 31st.—2 P.M., Dr. R. S. Frew.: Pyrexia. 3 P.M., Dr. A. Signy: The Examination of Cerebro-spinal Fluids.
Out-patient clinics daily at 10 A.M. and ward visits (except on Wednesday) at 2 P.M.

LONDON SCHOOL OF DERMATOLOGY, 49, Leicester-square, W.C.
TUESDAY, Oct. 29th.—5 P.M., Dr. W. Griffith: Eczema.
THURSDAY.—5 P.M., Dr. A. M. H. Gray: The Sarcoids and Lupus Pernio.

ST. JOHN CLINIC, Ranelagh-road, S.W.
FRIDAY, Nov. 1st.—4.30 P.M., Sir Leonard Hill, F.R.S.: Action of Ultra-violet, Visible, and Infra-red Rays.

INSTITUTE OF HYGIENE, 28, Portland-place, W.
WEDNESDAY, Oct. 30th.—3.30 P.M., Dr. L. S. T. Burrell: Tuberculosis in Youth.

CHADWICK PUBLIC LECTURE.
FRIDAY, Nov. 1st.—5.30 P.M. (26, Portland-place, W.), Dr. C. Killick Millard: The Vaccination Question To-day.

UNIVERSITY OF SHEFFIELD.
FRIDAY, Nov. 1st.—3 P.M. (Royal Hospital), Prof. A. E. Naish: Medical Cases.—3 P.M. (Royal Infirmary), Dr. A. E. Barnes: Medical Cases. 3 P.M. (Jessop Hospital), Prof. John Chisholm: Gynæcological Cases.
SUNDAY.—10.30 A.M. (Royal Hospital), Prof. A. E. Naish: Medical Cases. 10.30 A.M. (Royal Infirmary), Dr. A. E. Barnes: Medical Cases. Prof. Ernest Finch: Surgical Cases. 10.30 A.M. (Jessop Hospital), Mr. Eric Stacey: Gynæcological Cases.

GENERAL INFIRMARY, Leeds.
TUESDAY, Oct. 29th.—3.30 P.M., Mr. Broomhead: Injuries in the Region of the Elbow.

PUBLIC DISPENSARY, Leeds.
WEDNESDAY, Oct. 30th.—4 P.M., Dr. S. J. Hartfall: Nervous Dyspepsia and Gastro-intestinal Neuroses.

ROYAL INFIRMARY, Manchester.
TUESDAY, Oct. 29th.—4.15 P.M., Dr. Fergus R. Ferguson: Recent Advances in Neurology.
FRIDAY, Nov. 1st.—4.15 P.M., Mr. Geoffrey Jefferson: Demonstration of Neuro-surgical Cases.

Appointments

BELL, A. C., M.B. Lond., F.R.C.S. Eng., has been appointed gynæcologist to the Eastern Dispensary, Whitechapel.
CORDINER, R., M.B. Glasg., D.P.H., medical officer for the Burgh of Coatbridge.
DUNNE, B. J., M.B. N.Z., medical superintendent at the Dreadnought Hospital, Greenwich.
GERRIE, JOHN, M.B. Aberd., F.R.C.S. Edin., junior assistant surgeon to the department for the Treatment of Diseases of the Ear, Nose, and Throat, Royal Infirmary, Aberdeen; and hon. assistant surgeon for diseases of the Ear, Nose, and Throat to the Royal Aberdeen Hospital for Sick Children.
GILMOUR, HELEN, M.B. Glasg., pathologist at the Royal Alexandra Infirmary, Paisley.
GORDON-NAPIER, G., M.D. Edin., D.O.M.S., hon. assistant surgeon to the Nottingham and Midland Eye Infirmary.
GREEN, H. N., M.D. Sheff., hon. pathologist to the Jessop Hospital, Sheffield.
KNOWLTON, R. W., M.D. Camb., M.C.O.G., antenatal medical officer, gynæcologist, and consulting obstetrician for Southampton.
LEVY, S., M.B., medical superintendent at the Tilbury Hospital.
PAYNE, G. E. B., M.D. Lond., D.P.H., deputy medical officer of health to the Port of Southampton.
STACEY, J. E., M.D. Lond., F.R.C.S. Edin., hon. surgeon to the Jessop Hospital, Sheffield.
YULE, JOHN, M.D. Glasg., D.P.H., medical officer for Stockport.

Hospital for Sick Children, Great Ormond-street, London, W.C.—The following appointments are announced:—
WATERSON, D. J., M.B., Resident Medical Superintendent;
GORDON, I., M.B. Aberd., Out-patient Medical Registrar; and
BRADSHAW, D. B., M.B. Dub., D.P.H., Assistant Medical Officer to the Immunological Department.

Certifying Surgeons under the Factory and Workshop Acts: Dr. L. R. G. DE GLANVILLE (Ruthin District, Denbigh). Dr. W. BRUCE (Dingwall District, Ross).

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL.—The annual prize giving will take place in the board room of the hospital on Wednesday, Nov. 13th, at 3 P.M., when Lord Macmillan will deliver the inaugural address. The annual school dinner will be held at Claridge's Hotel on the same day at 7.30 for 8 P.M.